1998

Power Supply
Solutions
Guide

LAMBDA

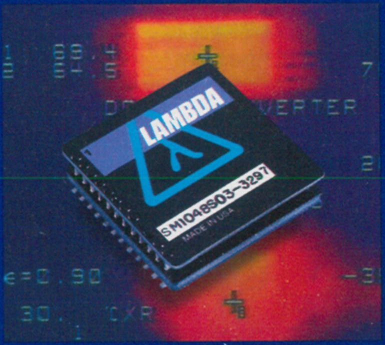
What we supply are solutions.

Lambda Electronics is celebrating it's 50th year. You probably know us for the industry's broadest line of standard, off-the-shelf power supplies, all of them available directly through our catalog. This year, however, we've re-named this resource "Solutions Guide". This subtle but significant change reflects a new commitment to a more responsive, customer-driven approach to the products we offer, and the way we offer them.

We continue to make the broadest possible line of standard power solutions available for immediate delivery. But the comprehensive range of products in this book is just one facet of a company that wants to supply the solution to your power-related design problem, no matter how unique that problem may be.

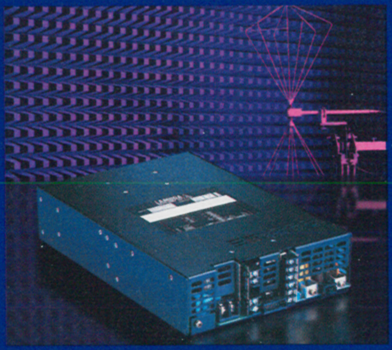
Selector guide page 5
Product specifications page 10-102
Ordering information page 104
Index by model number page 106
Value Added solutions page 116

Problem: DC-DC converters prevent board designers from going 100% surface mount.



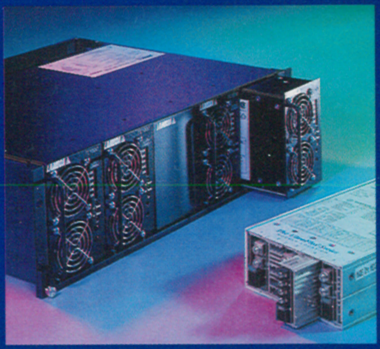
Lambda introduces the SM Series. We came up with a new heat dissipation technology that enabled us to create the first broad line of standard converters light enough to be surface mounted. Conventional thermal encapsulation required to dissipate heat had always made converters too heavy to be handled by pick-and-place equipment. The SM eliminates one of the last through-hole operations from many PC board assemblies.

Problem: Engineers and system integrators struggle to lower EMI to meet worldwide standards.



Lambda introduces the industry's first CE/EMI-compliant power supplies. Stringent new regulations place a burden on OEMs, and power supplies are a significient source of EMI in their systems. Rather than leave it to our customers to deal with the problem, we've invested in our own in-house EMI and lightning strike measurement facilities. The result is the new RP Series multiple output supplies.

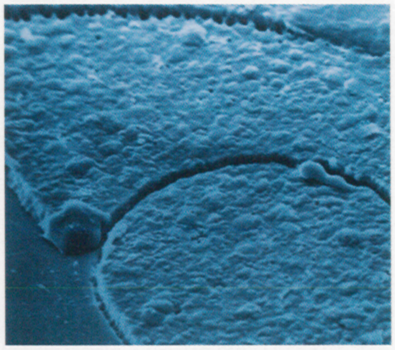
Problem: Reducing design cycle time.



Lambda's "standard products as custom solutions" strategy. We can shorten your time to market in several ways. First of all, we have more than 1500 standard products available from stock. Next, many of our solutions are modular and scalable. With our UltraFlex line, for example, we use off-the-shelf modules to instantly create a power supply tailored to your exact needs. And OEMs can turn to our Value Added division to create a turn-key solution in a fraction of the time typically spent on custom designs.

Engineers face problems. Specific engineering problems, as well as broader issues like cost, reliability and reducing design cycle time. Lambda has committed its resources to providing solutions. Our experience has taught us that the demands made of power supplies are ever changing—just as the devices that draw that power are changing. We know we must be keenly attuned to our customers' engineering challenges. Nowhere are the results of this understanding more evident than in our newest products.

Problem: OEMs must partner with suppliers that can ensure product quality and reliability.



A comprehensive quality strategy ensures Lambda reliability. From the equipment and materials we use to the service our employees provide, you can count on Lambda as a reliable supplier of high-quality power solutions. We've invested in state-of-the-art manufacturing and test facilities, and the components we use are carefully inspected. Our ISO 9000 certified manufacturing operations are designed and controlled to uphold the highest standards of workmanship. And we always make a point of seeking input and feedback from our customers.

Selecting a power supply

The selector guide on the following four pages divides our product line into AC or DC inputs, number of outputs, and then lists them by power.

The selector directs you to the page where you'll find a complete description and specifications. Below each of these descriptions you will also find a "hyper link" to similar solutions, highlighting their distinguishing features.

A complete listing of all Lambda products by full model number is on pages 106-115. It includes current products as well as built-to-order and obsolete products with suggested replacement models.

Rectifiers (distributed power front ends) are on pages 64-70. For component front end modules, see page 88.

Redundant or non-redundant rack systems are described on page 100.

Laboratory supplies are on page 98.

For price and availability, call
1-800-LAMBDA-4 (1-800-526-2324).

AC Input

Single Output

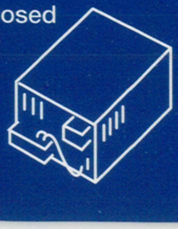
WATTS	INPUT VAC	OUTPUT VDC	DIMENSIONS (INCHES)	MODEL	PAGE
5	85-265	5, 12, 15	2.17x1.77x0.81	KWS5	10
10	85-265	5, 12, 15	2.52x1.77x0.81	KWS10	10
10	115	5, 12, 15, 24	3.7x1.93x0.67	VS10B	12
10	85-265	3.3, 5, 12, 15, 24	4.13x1.97x0.83	ZWS10	14
15	85-265	5, 12, 15	2.76x1.89x0.93	KWS15	10
15	115	5, 12, 15, 24	4.53x1.97x0.67	VS15B	12
15	85-265	3.3, 5, 12, 15, 24	5.63x2.36x0.83	ZWS15	14
15	85-265	5, 12, 15, 24, 48	1.38x3.81x3.82	RWS15	22
21	115	5, 12, 15, 24, 28	4.88x3.38x0.75	LNS-Z	36
24	115	0 to 7	5.63x4.88x2.59	LDS-Y-01	36
29	115	0 to 7	7x4.88x2.84	LDS-X-01	36
29	115/220	5, 12, 15, 24, 28	4.88x3.98x1.61	HSB	34
30	85-265	5, 12, 15, 24, 48	1.38x3.81x4.76	RWS30	22
30	115	5, 12, 15, 24, 48	5.22x1.97x0.98	VS30B	12
30	85-265	3.3, 5, 12, 15, 24, 36, 48	6.77x2.36x1.02	ZWS30	14
35	115	5, 12, 15, 24, 28	7x4.88x2.84	LDS-X	36
35	115	5, 12, 15, 24, 28	5.63x4.88x2.59	LDS-Y	36
50	85-265 PFC	3.3, 5, 12, 15, 24, 48	6.26x3.35x1.46	JWS50	24
50	115	5, 12, 15, 24, 48	7.68x1.97x.098	VS50B	12
50	85-265	3.3, 5, 12, 15, 24, 36, 48	7.87x2.95x1.02	ZWS50	14
58	115/220	5, 12, 15, 24, 28	4.88x7.01x2.76	HSC	34
60	85-265 PFC	24	5.12x4.53x2.36	NES60	32
60	85-265	24	4.88x1.93x4.00	DRP60	32
75	85-265 PFC	3.3, 5, 12, 15, 24, 48	6.89x3.62x1.65	JWS75	24
75	115	5, 12, 15, 24, 48	8.74x1.97x1.26	VS75B	12
75	85-265 PFC	3.3, 5, 12, 15, 24, 36, 48	8.74x1.97x1.26	ZWS75PF	14
80	115/220	8, 18, 40, 120, 300	12x3.88x4.34	LLS-5000	98
81	115	5, 12, 15, 24, 28	7x4.88x2.84	LNS-X	36
86	115/220	5, 12, 15, 24,28	4.88x7.01x2.76	HSN	34
100	85-265 PFC	3.3, 5, 12, 15, 24, 48	7.4x3.62x1.97	JWS100	24
100	115/220 PFC	5, 12, 15, 24, 48	8.5x4.75x1.77	SVPS10	44
100	115/220 Auto	5, 12, 15, 24, 48	8.5x4.75x1.77	SVS100	44
100	115	5, 12, 15, 24, 48	8.74x2.44x1.26	VS100B	12
100	85-265 PFC	36, 48	8.74x3.15x1.46	ZWS100PF	14
115	115/220	5, 24, 28	4.88x7x2.76	HSD	34
120	85-265 PFC	24	6.3x5.12x2.36	NES120	32
120	85-265 PFC	24	4.92x2.56x4.06	DRP120	32
120	85-265 PFC	24, 36	8.19x3.15x1.58	ZWS120PPF	14
150	85-265 PFC	3.3, 5, 12, 15, 24, 48	7.8x3.74x2.56	JWS150	24
150	115/220 PFC	5, 12, 15, 24, 48	8.5x4.75x1.77	SVPS15	44
150	115/220 Auto	5, 12, 15, 24, 48	8.5x4.75x1.77	SVS150	44
150	115	5, 12, 15, 24, 48	8.74x2.95x1.42	VS150B	12
150	85-265 PFC	5, 12, 15, 24, 48	8.74x3.54x1.69	ZWS150PF	14
160	115/220	8, 18, 40, 60, 120	12.75x3.88x4.34	LLS-6000	98
160	115/220	8, 18, 40, 60, 120	10 x4.28x3.78	LMS-6000	40
213	115	5, 12, 15, 24, 28	11x4.88x4.41	LNS-P	36
240	85-265 PFC	24	8.27x5.12x2.36	NES240	32
240	85-265	24	5.39x4.92x4.06	DRP240	32
250	115/220 Auto	5, 12, 15, 24, 28	9x3.38x4.75	LZS250	58
250	115	5, 12, 15, 24, 28	9x3.38x4.75	SE250	58
250	85-265 PFC	5, 12, 15, 24, 48	9.5x4.75x1.77	SVPS25	44

PCB Mount

PC Board

Open Frame

Enclosed



AC Input

WATTS	INPUT VAC	OUTPUT VDC	DIMENSIONS (INCHES)	MODEL	PAGE
300	85-265 PFC	3.3, 5, 12, 15, 24, 48	7.48x4.72x3.62	JWS300	24
400	115/220	8, 18, 40	11.88x8.06x4.34	LLS-8000	98
400	85-265 PFC	3.3, 5, 12, 24, 28	10.98x4.98x2.48	Alpha	48
400	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	10x5x2.5	UltraFlex	50
450	115	5, 12, 15, 24, 28	10.5x4.88x4.34	LRS-56	62
480	85-265 PFC	24	9.01x4.00x4.88	DRP480	32
500	85-265 PFC	24, 48	11.75x2x5.25	FE500	66
500	85-265 PFC	24, 48	12.13x2.0x4.87	JFS500	28
500	115/220 Auto	5, 12, 15, 24, 28	10.25x4.25x4.75	LZS-500	58
500	85-265	280	3.38x3.27x0.5	PR500	88
500	115	5, 12, 15, 24, 28	10.25x4.25x4.75	SE500	58
500	85-265 PFC	360	3.38x3.27x0.5	PF500A	94
600	85-265 PFC	3.3, 5, 12, 15, 24, 48	7.87x7.48x3.62	JWS600	24
600	88-265	50.5	8.66x3.74x1.08	PD600	64
600	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	11x5x2.5	UltraFlex	50
750	85-265 PFC	24, 48	12.74x3.3x4.87	JFS750	28
750	115/220 Auto	5, 12, 15, 24, 28	10.38x5x4.75	LZS750	58
750	115	5, 12, 15, 24, 28	10.38x5x4.75	SE750	58
800	115/220	18, 40, 60, 120, 300	13.75x8.06x4.34	LLS-9000	98
800	115/220	18, 40, 60, 120, 300	11.88x8x4.28	LMS-9000	40
1000	85-265 PFC	24, 48	11.75x3.3x5.25	FE1000	66
1000	85-265 PFC	24, 48	12.74x3.3x4.87	JFS1000	28
1000	115/220 Auto	5, 12, 15, 24, 28	10.5x5.63x.75	LZS-1000	58
1000	115	5, 12, 15, 24, 28	10.5x5.63x.75	SE-1000	58
1000	85-265 PFC	360	3.38x3.27x0.5	PF1000A	94
1200	115	5, 12, 15, 24, 28	13.63x6.63x4.88	LRS-59	62
1500	85-265 PFC	24, 48	11.75x5.6x5.25	FE1500	66
1500	85-265 PFC	24, 48	11.75x5.6x4.87	JFS1500	28
1500	115/220 Auto	5, 12, 15, 24, 28	11x8x4.75	LZS-1500	58
1500	115	5, 12, 15, 24, 28	11x8x4.75	SE-1500	58
1500	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	5x5x11	UltraFlex	50
2000	170-265 PFC	24, 48	11.75x5.6x5.25	FE2000	66
2000	170-265 PFC	24, 48	11.75x5.6x4.87	JFS2000	28
2800	170-265 PFC	48	13.0x8.0x5.0	WLR2800	70

Dual Output

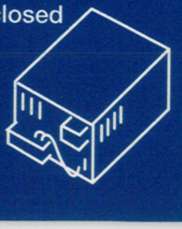
5	85-265	5/5,12/12,15/15	2.17x1.77x.81	KWD5	10
10	85-265	±5,12,15	2.52x1.77x.81	KWD10	10
15	85-265	±5,12,15	2.76x1.89x.93	KWD15	10
15	115	±15 to ±12	4.88x4x1.75	LND-Z-152	36
15	85-265	+5/12, 15/15	4.33x2.36x1.03	LWD15	20
30	85-265	5/12, 5/24, 15/15	5.84x2.36x1.03	LWD30	20
36	115	±15 to ±12	4.63x4.88x2.59	LND-Y-152	36
24	115/220	±12 to ±15	4.02x6.5x1.65	HDA-12-15	34
40	115/220	±12 to ±15	4.88x7.01x2.76	HDB-12-15	34
50	85-265	5/24, 12/12, 15/15	6.3x3.81x1.03	LWD50	20
63	115	±15 to ±12	7x4.88x2.84	LND-X-152	36
80	115/220	+12/12	4.88x8.82x2.76	HDC-12	34
80	115/220	+15/15	4.88x8.82x2.76	HDC-15	34
90	115	±15 to ±12	9x4.88x2.84	LND-W-152	36
150	115	±15 to ±12	11x4.88x4.41	LND-P-152	36
400	85-265 PFC	3.3, 5, 12, 24, 28	10.98x4.98x2.48	Alpha	48

PCB Mount

PC Board

Open Frame

Enclosed



WATTS	INPUT VAC	OUTPUT VDC	DIMENSIONS (INCHES)	MODEL	PAGE
400	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	10x5x2.5	UltraFlex	50
600	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	11x5x2.5	UltraFlex	50
1500	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	5x5x11	UltraFlex	50

Triple Output

30	85-265	5, 12/15, 12/15/5	6.3x2.76x1.03	LWT-30	20
30	85-265	5, 12/15, 12/15/5	5x3x1.2	SWT30	18
40	85-265	5, 12/15, 12/15/5	5x3x1.4	SWT40	18
40	115/220	5,±12 TO ±15	4.02x10.24x2.52	HTC1	34
50	85-265	5, 12/15, 12/15/5	6.3x3.82x1.03	LWT-50	20
65	85-265	5, 12/15, 12/15/5	6x3.5x1.77	SWT65	18
70	115/220	5,±12 TO ±15	4.88x11.02x2.76	HTD1	34
100	85-265	5, 12/15, 12/15/5	7.75x4.25x1.77	SWT100	18
115	115/220 PFC	5/12/12	8.5x4.75x1.77	SVPT115	44
115	115/220 Auto	5/12/12	8.5x4.75x1.77	SVT115	44
170	85-265 PFC	5/12/12	9.5x4.75x1.77	SVPT170	44
170	115/220 Auto	5/12/12	9.5x4.75x1.77	SVT170	44
300	85-265 PFC	5/12/12	11x4.75x1.77	SVPT300	44
300	115/220 Auto	5/12/12	11x4.75x1.77	SVT300	44
400	85-265 PFC	3.3, 5, 12, 24, 28	10.98x4.98x2.48	Alpha	48
400	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	10x5x2.5	UltraFlex	50
500	85-265 PFC	3.3/5,±12,±12	12.13x5x2.5	RP0500	54
600	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	11x5x2.5	UltraFlex	50
750	85-265 PFC	3.3/5,±12,±12	12.x8x2.5	RP0750	54
1000	85-265 PFC	3.3/5,±12,±12	12.x8x2.5	RP1000	54
1500	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	5x5x11	UltraFlex	50

Quad Output

130	115/220 Auto	5, +12/+15, -12/-15, 5/24	8.5x4.75x1.77	SVPQ130	44
130	115/220 Auto	5, +12/+15, -12/-15, 5/24	8.5x4.75x1.77	SVQ130	44
200	85-265 PFC	5, +12, -12, 5/24	9.5x4.75x1.77	SVPQ200	44
200	115/220 Auto	5, +12, -12, 5/24	9.5x4.75x1.77	SVQ200	44
300	85-265 PFC	5, +12, -12, 5/12/24	11x4.75x1.77	SVPQ300	44
300	115/220 Auto	5, +12, -12, 5/24	11x4.75x1.77	SVQ300	44
400	85-265 PFC	3.3, 5, 12, 24, 28	10.98x4.98x2.48	Alpha	48
400	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	10x5x2.5	UltraFlex	50
500	85-265 PFC	3.3/5,±12,±12, 3.3/5/12/24/48	12.13x5x2.5	RP500	54
600	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	11x5x2.5	UltraFlex	50
750	85-265 PFC	3.3/5,±12,±12, 3.3/5/12/24/48	12.x8x2.5	RP750	54
1000	85-265 PFC	3.3/5,±12,±12, 3.3/5/12/24/48	12.x8x2.5	RP1000	54
1500	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	5x5x11	UltraFlex	50

Pent Output

400	85-265 PFC	3.3, 5, 12, 24, 28	10.98x4.98x2.48	Alpha	48
400	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	10x5x2.5	UltraFlex	50
500	85-265 PFC	3.3/5,±12,±2, 3.3/5/12/24/48, 3.5/5/12/24248	12.13x5x2.5	RP500	54
600	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	11x5x2.5	UltraFlex	50
750	85-265 PFC	3.3/5,±12,±12, 3.3/5/12/24/48, 3.5/5/12/24248	12.x8x2.5	RP750	54
1000	85-265 PFC	3.3/5,±12,±12, 3.3/5/12/24/48, 3.5/5/12/24248	12.x8x2.5	RP1000	54
1500	85-265 PFC	2, 3.3, 5, 12, 15, 24, 48	5x5x11	UltraFlex	50

DC Input

Single Output

WATTS	INPUT VDC	OUTPUT VDC	DIMENSIONS (INCHES)	MODEL	PAGE
2	5,12,24,48	5, 12, 15	1.29x.81x0.31	PP1R5	74
3	5,12,24,48	5, 12, 15	1.84x1.09x0.31	PP3	74
6	5,12,24,48	5, 12, 15	1.84x1.65x0.31	PP6	74
10	12,24,48	3.3, 5, 12, 15	2.00x1.00x0.33	PM10	76
10	24,48	3.3, 5, 12, 15	1.43x1.4x0.40	SM10	78
15	12,24,48	3.3, 5, 12, 15	2.00x1.6x0.33	PM15	76
20	12,24,48	3.3, 5, 12, 15	2.00x1.6x0.33	PM20	76
20	24,48	3.3, 5, 12, 15	1.83x1.4x0.40	SM20	78
30	12,24,48	3.3, 5, 12, 15	3.00x2.50x0.33	PM30	76
30	48	2, 3.3, 5	2.56x2.35x0.31	RM30	80
30	24, 48	3.3, 5, 12, 15	2.545x2.4x0.40	SM30	78
50	24,48,110,280	5, 12, 15, 28	3.38x1.61x0.5	PH50	82
50	48	2, 3.3, 5	3.86x2.36x0.31	RM50	80
75	48, 110, 280	3, 5, 12, 15, 28	3.38x1.61x0.5	PH75	82
100	24,48,280	5, 12, 15, 28	3.38x2.44x0.5	PH100	82
100	48	2, 3.3, 5	4.57x2.36x0.31	RM100	80
150	48, 110, 280	2.2, 3, 5, 12, 15, 28	3.38x3.27x0.5	PH150	82
300	48, 110, 280	2, 5, 12, 15, 28	5.75x3.38x0.5	PH300	82
600	280	3.3, 5, 12, 15, 28, 48	5.75x3.38x0.5	PH600	82
600	48	2, 3.3, 5, 12, 15, 24, 48	12x5x2.5	UltraFlex	92

Dual Output

2	5,12,24,48	±12, ±15	1.29x.81x0.31	PPD1R5	74
3	5,12,24,48	±12, ±15	1.84x1.09x0.31	PPD3	74
6	5,12,24,48	±12, ±15	1.84x1.65x0.31	PPD6	74
10	12,24,48	±12, ±15	2x1x0.33	PM10	76
10	24,48	±12, ±15	1.43x1.4x0.40	SM10	78
15	12,24,48	±12, ±15	2x1.60x0.33	PM15	76
20	12,24,48	±12, ±15	2x1.60x0.33	PM20	76
20	24,48	±12, ±15	1.83x1.4x0.40	SM20	78
30	12,24,48	±12, ±15	3x2.50x0.33	PM30	76
30	24,48	+/-12, +/-15	2.545x2.4x0.40	SM30	78
600	48	2, 3.3, 5, 12, 15, 24, 48	12x5x2.5	UltraFlex	92

Triple Output

30	12,24,48	3.3/12/-12	3x2.50x0.33	PM30	76
30	12,24,48	3.3/12/-12	2.545x2.4x0.40	SM30	78

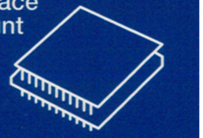
Quad Output

600	48	2, 3.3, 5, 12, 15, 24, 48	12x5x2.5	UltraFlex	92
750	48	3.3/5, +12, -12, 5/12/24/48	12.03x8x2.65	PFD0750	94
1000	48	3.3/5, +12, -12, 5/12/24/48	12.03x8x2.65	PFD1000	94

Pent Output

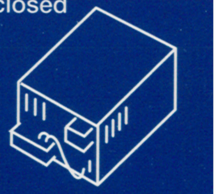
300	48	5, 12, -12, -5.2, 24	11.8x4.9x1.77	WD	90
600	48	2, 3.3, 5, 12, 15, 24, 48	12x5x2.5	UltraFlex	92

🟩 Surface Mount



🟦 PCB Mount

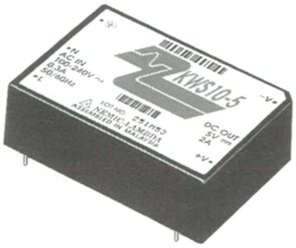
🟥 Enclosed



AC-DC Power Supplies

KW Series

Compact AC-DC PCB-mount power supplies



85-265VAC Wide Range Input

World-wide Agency Approvals – UL, CSA, TUV and CE Mark

PC Board Mountable

-10°C ~ +70°C Continuous Operation

Ultra-Small and Lightweight

Low Noise Conducted EMI Class B

SMD Technology

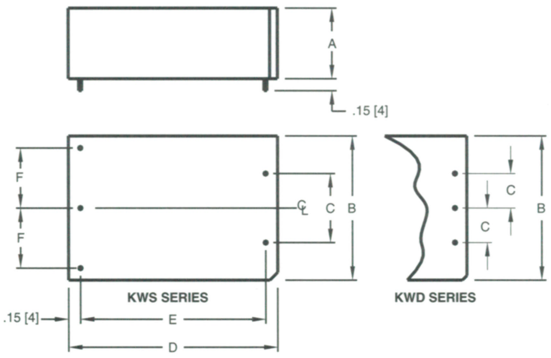
Convection Cooled

Lambda's KW series is an ultra-small, lightweight, PC board mountable AC-DC power supply. Utilizing SMD technology, the KW series significantly achieves a reduction in size minimizing the maximum allowable PC board area in end-users' equipment. A wide operating temperature range up to 70°C allows it to be used in a variety of applications eliminating the need for a heatsink. The KW series is available from 5W to 15W including single (5V, 12V & 15V) and dual (12V & 15V) outputs.

Similar products		**Page**
RWS-A	Chassis Mountable with Barrier	22
ZWS	Open Frame PCB Type with Molex	14
PP, PM, PH	Low Power DC-DC	74, 76, 82

AC Input	85-265VAC 47-440Hz.
DC Input	110-340VDC.
Efficiency	5V @ 73%, 12 & 15V @ 76% (Typical) Dual 12/15V @ 73%.
Inrush Current Limiting	15A@100Vac, 30A@200Vac.
Conducted EMI	VCCI-2, FCC 20780 class B,VDE 0871 Class B (with external cap).
Output Voltage Accuracy	±5% (fixed).
Line Regulation	0.4%.
Load Regulation	0.8%.
Ripple and Noise	120mV pk-pk for 5 Volts. 150mV pk-pk for 12,15,12/12 & 15/15 Volts.
Hold-up Time	17ms (typical).
Overvoltage Protection	110% (typical).
Overload Protection	Output current limiting. Avoid operation in overcurrent for longer than 30 seconds (set @ appr. 125%).
Cooling	Convection.
Operating Temperature Range	-10°C to 70°C, derate linearly from 50°C to 25% of rating at 70°C.
Storage Temperature	-30°C to +85°C.
Humidity	20% to 90% RH (non-condensing).
Isolation	Input to output – 3.0kVAC. Input to FG (Chassis) – 2.0kVAC. Output to FG (Chassis) – 500VAC.
Mounting	PC board mountable.
Safety Agency Approval	UL1950; CSA 22.2, No. 234; EN60950 & CE Mark (Low Voltage Directive).
Warranty	1 year.

		MAX CURRENT AMPS AT				
OUTPUT	**POWER (W)**	**40°**	**50°**	**60°**	**71°**	**MODEL**
5V	5	1.00	1.00	0.600	0.250	**KWS5-5**
	10	2.00	2.00	1.200	0.500	**KWS10-5**
	15	3.00	3.00	1.800	0.750	**KWS15-5**
12V	5	0.45	0.45	0.270	0.110	**KWS5-12**
	10	0.90	0.90	0.540	0.220	**KWS10-12**
	15	1.30	1.30	0.780	0.320	**KWS15-12**
15V	5	0.35	0.35	0.210	0.087	**KWS5-15**
	10	0.70	0.70	0.420	0.175	**KWS10-15**
	15	1.00	1.00	0.600	0.250	**KWS15-15**
±12V	5	0.22	0.220	0.137	0.055	**KWD5-1212**
	10	0.45	0.450	0.280	0.110	**KWD10-1212**
	15	0.65	0.650	0.400	0.160	**KWD15-1212**
±15V	5	0.18	0.180	0.110	0.045	**KWD5-1515**
	10	0.36	0.360	0.220	0.090	**KWD10-1515**
	15	0.52	0.520	0.320	0.130	**KWD15-1515**



DIMENSIONS:

MODEL	A	B	C	D	E	F
KWS5	.807 (20.5)	1.77 (45.0)	.787 (20.0)	2.16 (55.0)	1.850 (47.0)	.688 (17.5)
KWS10	.807 (20.5)	1.77 (45.0)	.787 (20.0)	2.52 (64.0)	2.125 (54.0)	.688 (17.5)
KWS15	.925 (23.5)	1.889 (48.0)	.905 (23.0)	2.75 (70.0)	2.440 (62.0)	.787 (20.0)
KWD5	.807 (20.5)	1.77 (45.0)	.393 (10.0)	2.16 (55.0)	1.850 (47.0)	.688 (17.5)
KWD10	.807 (20.5)	1.77 (45.0)	.393 (10.0)	2.52 (64.0)	2.125 (54.0)	.688 (17.5)
KWD15	.925 (23.5)	1.889 (48.0)	.453 (11.5)	2.75 (70.0)	2.440 (62.0)	.787 (20.0)

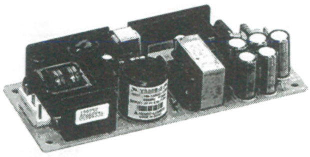
WEIGHT:

MODEL	GRAMS
KWS5	75
KWS10	100
KWS15	150
KWD5	75
KWD10	100
KWD15	150

NOTE:
1. DIMENSIONS ARE IN INCHES
   EXCEPT DIMENSIONS ( ) ARE IN MM.
2. PIN: 5x .039 (1.0).

VSB Series

100/115VAC low cost power supplies



Radiated & Conducted EMI per FCC Class B & VCCI-11

Output Adjustment(10%)

Full Agency Approvals

Low Cost

105° Capacitors for High Reliability

Lambda's 2 Year Warranty

Lambda's "VSB" Series single output power supplies, using a PCB design style, with an operating input voltage range of 85 - 132VAC, for usage in both North America and Japanese markets.

Available in seven package sizes to accommodate output power levels from 10 to 150 Watts, and an output voltage range from 3.3 to 48VDC.

All models utilize high performance extended life components, and Lambda's component derating specifications.

Lambda's "VSB" Series will prove to be the economical choice for high reliability, quality, and enhanced lifetime operation.

Similar products		**Page**
ZW	85-265VAC	14
RWS & JWS	Low Power/Chassis & Barrier Strips	22, 24
SWT	Triple Outputs	18

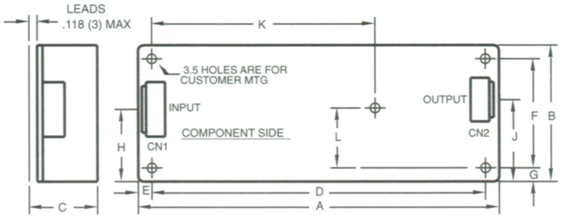
AC Input	85-132VAC, 47-440Hz.120% peak for <10s and with a duty cycle of <35%.
DC Input	110-175VDC.
Efficiency	Dependent upon model type at 100VAC, 100% load, 25°C ambient. Examples: VS10B: 63% 3V, 72% 5V, 72% 12V, 73% 15V & 24V. VS150B: 72% 3V, 78% 5V, 80% 12V to 24V, 81% 36 & 48V.
Inrush Current Limiting	30A at 100VAC (Typ).
EMI	Radiated and conducted EMI conforms to FCC Class B, VCCI-II .
Output Voltage Adj Range	±10% adj.
Line Regulation	20mV for 3.3 & 5V, 48mV for 12V, 60mV for 15V, 96mV for 24V, 144mV for 36V, 192mV for 48V.
Load Regulation	40mV for 3.3 & 5V, 96mV for 12V, 120mV for 15V, 150mV for 24V, 240mV for 36V, 400mV for 48V.
Ripple and Noise	120mV for 3.3 and 5V. 150mV for 12 and 15V. 200mV for 24V . 300mV for 36V. 400mV for 48V .
Hold-up Time	17ms at 100VAC, 25°C and maximum output power.
Overvoltage Protection	VS10B to VS30B, output clamped by zener diode ~140%. VS50 to VS150B, converter shutdown, manual input reset~125%.
Overload Protection	Current limiting with automatic recovery, approximately 125%. Avoid prolonged operation in overload or dead short.
Operating Temperature Range	-10° to +60°C.
Storage Temperature	-30°C to +85°C.
Isolation	Input to Output – 2.0kVAC. Input to Chassis (FG) – 2.0kVAC. Output to Chassis(FG) – 500kVAC.
Input and Output Connections	JST Connectors.
Safety Agency Approval	UL1950, CSA234, Dentori.
Warranty	2 years.

		MAX CURRENT AMPS AT			
OUTPUT	**POWER (W)**	**40°**	**50°**	**60°**	**MODEL**
3.3V (±10%)	6.6	2.00	2.00	1.40	**VS10B-3**
	9.9	3.00	3.00	2.10	**VS15B-3**
	19.8	6.00	6.00	4.20	**VS30B-3**
	33.0	10.00	10.00	7.00	**VS50B-3**
	49.5	15.00	15.00	10.50	**VS75B-3**
	66.0	20.00	20.00	14.00	**VS100B-3**
	99.0	27.00	24.00	18.00	**VS150B-3**
5V (±10%)	10.0	2.00	2.00	1.40	**VS10B-5**
	15.0	3.00	3.00	2.10	**VS15B-5**
	30.0	6.00	6.00	4.20	**VS30B-5**
	50.0	10.00	10.00	7.00	**VS50B-5**
	75.0	15.00	15.00	10.50	**VS75B-5**
	100.0	20.00	20.00	14.00	**VS100B-5**
	150.0	27.00	24.00	18.00	**VS150B-5**
12V (±10%)	10.2	0.85	0.85	0.60	**VS10B-12**
	15.0	1.25	1.25	0.90	**VS15B-12**
	30.0	2.50	2.50	1.75	**VS30B-12**
	51.6	4.30	4.30	3.00	**VS50B-12**
	75.6	6.30	6.30	4.40	**VS75B-12**
	105.0	8.50	8.50	5.95	**VS100B-12**
	151.0	11.25	10.00	7.50	**VS150B-12**
15V (±10%)	10.5	0.70	0.70	0.50	**VS10B-15**
	15.0	1.00	1.00	0.70	**VS15B-15**
	30.0	2.00	2.00	1.40	**VS30B-15**
	52.5	3.50	3.50	2.50	**VS50B-15**
	75.0	5.00	5.00	3.50	**VS75B-15**
	105.0	7.00	7.00	4.90	**VS100B-15**
	150.0	9.00	8.00	6.00	**VS150B-15**
24V (±10%)	10.8	0.45	0.45	0.30	**VS10B-24**
	15.6	0.65	0.65	0.45	**VS15B-24**
	31.2	1.30	1.30	0.90	**VS30B-24**
	60.0	2.50	2.50	1.75	**VS50B-24**
	76.8	3.20	3.20	2.20	**VS75B-24**
	103.2	4.30	4.30	3.00	**VS100B-24**
	151.2	5.67	5.04	3.80	**VS150B-24**
36V (±10%)	75.6	2.10	2.10	1.50	**VS75B-36**
	108.0	3.00	3.00	2.10	**VS100B-36**
	151.2	3.80	3.40	2.50	**VS150B-36**
48V (±10%)	76.8	1.60	1.60	1.10	**VS75B-48**
	105.6	2.20	2.20	1.50	**VS100B-48**
	153.6	2.90	2.60	1.90	**VS150B-48**

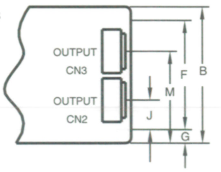
DIMENSIONS: **WEIGHT:**

MODEL	A	B	C	D	E	F	G	H	J	K	L	M	
VS10	3.70 (94)	1.93 (49)	.67 (17)	3.425 (87)	.138 (3.5)	1.654 (42)	.138 (3.5)	1.02 (26)	.85 (21.5)	-	-	-	.17 LBS
VS15	4.53 (115)	1.97 (50)	.67 (17)	4.252 (108)	.138 (3.5)	1.693 (43)	.138 (3.5)	1.22 (31)	1.39 (35.25)	-	-	-	.22 LBS
VS30	5.22 (132.5)	1.97 (50)	.98 (25)	4.823 (122.5)	.197 (5)	1.576 (40)	.197 (5)	1.02 (26)	1.18 (30)	-	-	-	.29 LBS
VS50	7.68 (195)	1.97 (50)	.98 (25)	7.283 (185)	.197 (5)	1.576 (40)	.197 (5)	1.10 (28)	.67 (17)	-	-	-	.44 LBS
VS75	8.74 (222.0)	1.97 (50)	1.26 (32)	8.346 (212)	.197 (5)	1.576 (40)	.197 (5)	.85 (21.5)	1.06 (27)	5.335 (135.5)	1.280 (32.5)	-	.77 LBS
VS100	8.74 (222.0)	2.44 (62)	1.26 (32)	8.346 (212)	.197 (5)	2.047 (52)	.197 (5)	.98 (25)	1.22 (31)	4.705 (119.5)	1.673 (42.5)	-	.92 LBS
VS150	8.74 (222.0)	2.95 (75)	1.42 (36)	8.346 (212)	.197 (5)	2.560 (65)	.197 (5)	1.81 (46)	.85 (21.7)	4.961 (126)	2.165 (55)	1.91 (48.5)	1.21 LBS

NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.

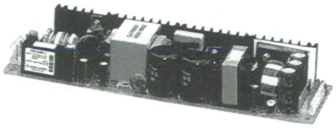


NOTE: TOP LEFT AND BOTTOM RIGHT MOUNTING HOLES ARE NOT PRESENT ON VS10 MODELS



ZW Series

Worldwide, low cost power supplies



Radiated & Conducted EMI per EN55022-B & FCC Class B.

Universal AC Input

Output Adjustment (10%)

High Quality Design

Input Transient Protection

Power Factor & Harmonic Correction

Worldwide Safety Agency Approvals

High Current Capability on the _PPF Version for Thermal Printer Applications

Lambda's 2 year Warranty

Lambda's ZWS Series of single output power supplies is a PCB style power supply with continuous wide range or auto-ranging AC input. They are engineered to EN61000-4 (-2,-3,-4,-5,-6), and models from 75 watts and above include a built-in passive filter to meet the Power Factor & Harmonic Correction requirements of EN61000-3-2 with radiated and conducted EMI to curve B.

Available in nine package sizes from 5 to 150 watts with output voltages from 3.3 to 48 volts using high performance components, Lambda's ZWS Series will prove to be the economical choice for high reliability and quality, ensuring maximum up-time. For global applications, the ZWS has been designed with the global market in mind featuring world-wide safety approvals including: UL1950, CSA950, EN60950 and will carry the CE Mark.

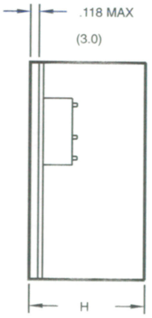
Similar products		**Page**
VSB	Lower Cost 85-132Vac	12
SWT	Multiple Output	18
JWS	Chassis and Barrier Strips	24
SV	Higher Power	44

AC Input	ZWS5 to ZWS50: 85-265VAC, 47-440Hz ZWS75 to ZWS150PF: 85-132, 170-265VAC, 47-63Hz (Autostrap).
DC Input	ZWS5 to ZWS50: 120-330VDC.
Efficiency	Dependent upon model type @ 100VAC, 100% load, 25°C ambient : Examples: ZWS5: 62% 3V, 67% 5V, 68% 12V & 15V, 70% 24V. ZWS150: 72% 3V, 78% 5V, 80% 12V & 15V, 82% 24 to 48V.
Power Factor Correction	ZWS75 to ZWS150PF, Conforms to EN61000-3-2 Class D.
Input Transient Protection	EN61000-4-2, -3, -4, -5, -6.
Inrush Current Limiting	25°C ambient, cold start ZWS5 to ZWS50, 15A @ 100VAC, 30A @ 200VAC. ZWS75 to ZWS150, 30A @ 100/200VAC.
EMI	Conforms to EN55022 Curve B, FCC Class B, VCC1-2.
Output Voltage Adj Range	±10%.
Line Regulation	20mV for 3.3 & 5V, 48mV for 12V, 60mV for 15V, 96mV for 24V, 144mV for 36V, 192mV for 48V. Except ZWS120PPF: 24mV for 24V, 36mV for 36V.
Load Regulation	40mV for 3.3 & 5V, 96mV for 12V, 120mV for 15V, 150mV for 24V, 240mV for 36V, 300mV for 48V. Except ZWS120PPF: 120mV for 24V, 180mV for 36V.
Minimum Load	None.
Ripple and Noise	120mV for 3.3 & 5V, 150mV for 12,15V; 200mV for 24V, 300mV for 36V, 400mV for 48V. Except ZWS120PPF: 240mV for 24V, 360mV for 36V.
Hold-up Time	17ms @ 100VAC, 25°C and @ maximum average output power.
Overcurrent Protection	Current limiting with automatic recovery. Avoid prolonged operation in overload or dead short. ZWS5 to ZWS50, ~ 125%. ZWS75, ZWS100 & ZWS150, ~ 130%. ZWS120, ~ 205%.
Overvoltage Protection	ZWS5 to ZWS30, output clamped by zener diode ~ 140%. ZWS50 to ZWS150, converter shutdown, manual input reset ~ 125%.
Cooling	Natural Convection, See Tables.
Operating Temperature Range	-10°C to +60°C.
Storage Temperature	-30°C to +85°C.
Temperature Coefficient	Typically less than 0.02%.
Humidity	10% to 90% RH (non-condensing).
Isolation	Input to Output – 3.0kVAC. Input to Chassis (FG) – 2.0kVAC. Output to Chassis (FG) – 500VAC for 1 minute.
Isolation	Output to Chassis (FG) –>100MOhm @ 25°C and 70% RH.
Remote Sensing	None.
Input and Output Connections	Molex or JS (J option).
Safety Agency Approval	UL1950, CSA950, EN60950, Dentori, CE Mark.
Options	/A Cover (Additional deratings may apply) /J JST input & output connectors in place of Molex.
Warranty	2 years.

		MAX CURRENT AMPS AT			
OUTPUT	POWER (W)	40°	50°	60°	MODEL
3.3V (2.97-3.63)	3.3	1.00	1.00	0.70	**ZWS5-3**
	6.6	2.00	2.00	1.40	**ZWS10-3**
	9.9	3.00	3.00	2.10	**ZWS15-3**
	19.8	6.00	6.00	4.20	**ZWS30-3**
	33	10.00	10.00	7.00	**ZWS50-3**
	49.5	15.00	15.00	10.50	**ZWS75PF-3**
	66	20.00	20.00	12.00	**ZWS100PF-3**
	99	30.00*	30.00*	21.00*	**ZWS150PF-3**
5V (4.5-5.5)	5	1.00	1.00	0.70	**ZWS5-5**
	10	2.00	2.00	1.40	**ZWS10-5**
	15	3.00	3.00	2.10	**ZWS15-5**
	30	6.00	6.00	4.20	**ZWS30-5**
	50	10.00	10.00	7.00	**ZWS50-5**
	75	15.00	15.00	10.50	**ZWS75PF-5**
	100	20.00	20.00	12.00	**ZWS100PF-5**
	150	30.00*	30.00*	21.00*	**ZWS150PF-5**
12V (10.8-13.2)	5	0.42	0.42	0.30	**ZWS5-12**
	10	0.85	0.85	0.60	**ZWS10-12**
	15	1.25	1.25	0.87	**ZWS15-12**
	30	2.50	2.50	1.75	**ZWS30-12**
	51	4.30	4.30	3.00	**ZWS50-12**
	76	6.30	6.30	4.40	**ZWS75PF-12**
	102	8.50	8.50	5.10	**ZWS100PF-12**
	150	12.50*	12.50*	8.50*	**ZWS150PF-12**
15V (13.5-16.5)	5	0.34	0.34	0.24	**ZWS5-15**
	10	0.70	0.70	0.50	**ZWS10-15**
	15	1.00	1.00	0.70	**ZWS15-15**
	30	2.00	2.00	1.40	**ZWS30-15**
	52	3.50	3.50	2.50	**ZWS50-15**
	75	5.00	5.00	3.50	**ZWS75PF-15**
	100	6.70	6.70	4.00	**ZWS100PF-15**
	150	10.00*	6.00*	7.00*	**ZWS150PF-15**
24V (21.6-26.4)	5	0.22	0.22	0.15	**ZWS5-24**
	10	0.45	0.45	0.30	**ZWS10-24**
	15	0.65	0.65	0.45	**ZWS15-24**
	31	1.30	1.30	0.91	**ZWS30-24**
	50	2.10	2.10	1.47	**ZWS50-24**
	76	3.20	3.20	2.24	**ZWS75PF-24**
	103	4.30	4.30	2.60	**ZWS100PF-24**
	122	5.00	5.00	3.50	**ZWS120PPF-24**
	151	6.30*	6.30*	4.40*	**ZWS150PF-24**
36V (32.4-39.6)	32	0.90	0.90	0.63	**ZWS30-36**
	50	1.40	1.40	0.98	**ZWS50-36**
	75	2.10	2.10	1.47	**ZWS75PF-36**
	100	2.80	2.80	1.68	**ZWS100PF-36**
	122	3.40	3.40	2.38	**ZWS120PPF-36**
	151	4.20*	4.20*	2.94*	**ZWS150PF-36**
48V (43.2-52.8)	33	0.70	0.70	0.49	**ZWS30-48**
	52	1.10	1.10	0.77	**ZWS50-48**
	76	1.60	1.60	1.12	**ZWS75PF-48**
	100	2.10	2.10	1.26	**ZWS100PF-48**
	153	3.20*	3.20*	2.24*	**ZWS150PF-48**

*ZWS150 current ratings are with 0.7m/s forced air cooling.

ZWS Series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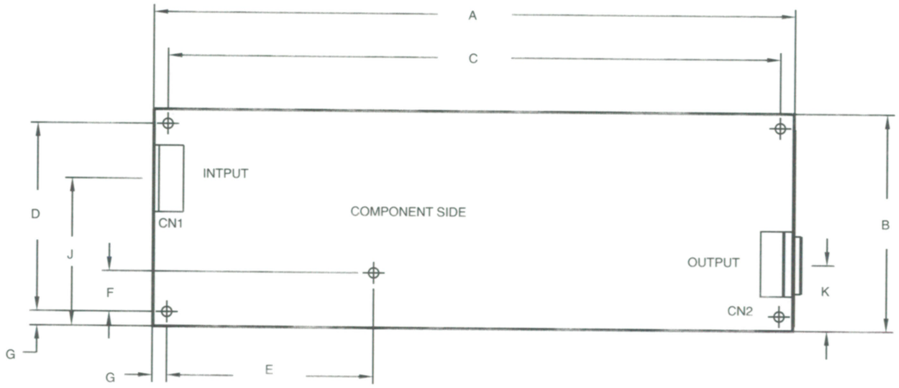
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C
INTPUT
CN1
COMPONENT SIDE
OUTPUT
CN2
D
J
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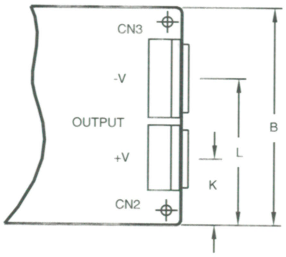

CN3
-V
OUTPUT
+V
CN2
L
K
B

DIMENSIONS:

MODEL	A	B	C	D	E	F	G	H	J	K	L
ZWS5	3.86 (98.0)	1.77 (44.9)	3.580 (90.9)	1.500 (38.1)	-	-	.14 (3.5)	.83 (21.0)	1.05 (26.6)	.54 (13.7)	-
ZWS10	4.14 (105.1)	1.97 (50.0)	3.860 (98.0)	1.690 (42.9)	-	-	.14 (3.5)	.83 (21.0)	.99 (25.1)	.67 (17.0)	-
ZWS15	4.93 (125.2)	1.97 (50.0)	4.650 (118.1)	1.690 (42.9)	-	-	.14 (3.5)	.83 (21.0)	1.04 (26.4)	.57 (14.4)	-
ZWS30	5.24 (133.0)	2.17 (55.1)	4.850 (123.1)	1.770 (43.1)	-	-	.20 (5.0)	1.02 (25.9)	.20 (5.0)	1.16 (29.4)	-
ZWS50	7.68 (195.0)	2.17 (55.1)	7.290 (185.1)	1.770 (43.1)	-	-	.20 (5.0)	1.02 (25.9)	1.32 (33.5)	.72 (18.2)	-
ZWS75	8.74 (221.9)	2.17 (55.1)	8.350 (212.0)	1.770 (43.1)	3.330 (84.5)	-	.20 (5.0)	1.38 (35.0)	1.04 (26.4)	.88 (22.3)	-
ZWS100	8.74 (221.9)	2.44 2.44	8.350 (212.0)	2.050 (52.0)	3.230 (82.0)	.280 (7.1)	.20 (5.0)	1.38 (35.0)	1.00 (25.4)	1.02 (25.9)	-
ZWS120	8.188 (208.0)	3.149 (80.0)	7.795 (198.0)	2.755 (70.0)	3.031 (77.0)	.748 (19.0)	(5.0) (5.0)	1.574 (40.0)	1.043 (26.5)	1.850 (47.0)	-
ZWS150	8.74 (221.9)	2.95 (74.9)	8.350 (212.0)	2.560 (65.0)	2.930 (74.4)	.550 (13.9)	.20 (5.0)	1.58 (40.1)	2.01 (51.0)	1.90 (48.2)	.88 (22.3)

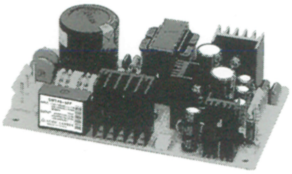
WEIGHT:

MODEL	GRAMS
ZWS5	120g
ZWS10	120g
ZWS15	140g
ZWS30	270g
ZWS50	370g
ZWS75	500g
ZWS100	600g
ZWS120	650g
ZWS150	800g

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 5-.137(3.5) HOLES ARE FOR CUSTOMER CHASSIS MTG. ALL HOLES MUST BE SCREWED DOWN IN ORDER TO CONFORM WITH VIBRATION SPEC.
3. KEEP .16(4.0) MIN DISTANCE BETWEEN PC-BOARD EDGE AND CUSTOMER CHASSIS.

SWT Series Low cost triple output power supplies



Radiated & Conducted EMI per EN55022-B & FCC Class B

Universal AC Input

Full Power at 50°C with Convection Cooling

High Grade Components for Continuous Operation

Worldwide Safety Agency Approvals

Lambda's 2 Year Warranty

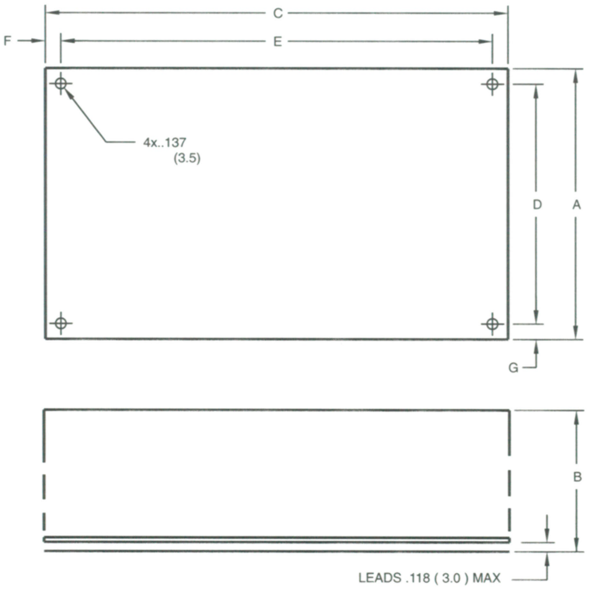
Lambda's SWT series of triple output PCB style power supplies have a continuous wide range or auto ranging AC input and EMI to curve B. Full power is available up to 50°C ambient without the need for forced air cooling.

Available in four Industry standard package sizes from 30-100 watts using high performance components, Lambda's SWT series will prove to be the economical choice for high reliability and quality, ensuring maximum up-time. The SWT has been designed with the global market in mind featuring world-wide safety approvals including: UL1950, CSA950, EN60950, Dentori and carries the CE Mark.

Similar products		**Page**
SV	Greater than 100W	44
ZW	Single Outputs	14
LWT	Low Profile Chassis Mount	20

AC Input	SWT30, SWT40 & SWT100: 85-265VAC, 47-63Hz. (110-340VDC) SWT65: 85-132, 170-265VAC, 47-63 Hz (Autostrap).
Efficiency	At 100VAC, 100% load, 25°C ambient. SWT30 & SWT40: 70%; SWT65: 72%; SWT100: 74%.
Inrush Current Limiting	25°C ambient, cold start. SWT30, SWT40, SWT100, 15A at 100VAC, 30A at 200VAC. SWT65, 30A at 100/200VAC.
EMI	Conforms to EN55022 Curve B, FCC Class B, VCCI-II.
Output Adjustment	None.
Line Regulation	+5V 1%, +12/15V 2%, -5/12/15V 1% 85-132 or 170-265VAC input change.
Load Regulation	+5V 2%, +12/15V 4%, -5/12/15V 2%. Minimum load to maximum load change.
Minimum Load	SWT30: +5V 0.2A, +12/15 0.4A; SWT40: +5V 0.2A, +12/15V 0.3A; SWT65: +5V 0.3A, SWT100: +5V 0.5A.
Ripple and Noise	±5V 120mV, ±12 or ±15V 150mV.
Hold-up Time	17ms at 100VAC, 25°C and maximum average output power.
Overcurrent Protection	Current limiting with automatic recovery. Avoid prolonged operation in overload or dead short. SWT30: >170%; SWT40: >140% SWT65: >105%; SWT100 > 105%.
Overvoltage Protection	+5V output only. Output clamped by zener diode to ~6V.
Cooling	Natural Convection.
Operating Temperature Range	-10°C to +60°C. 100% output at 50°C, derate linearly to 70% at 60°C.
Storage Temperature	-20°C to +85°C.
Temperature Coefficient	0.04% per °C.
Humidity	10% to 95% RH (non-condensing).
Isolation	Input to Output – 3.0 kVAC. Input to Chassis(FG) – 2.5kVAC. Output to Chassis(FG) – 500kVAC.
Isolation Resistance	Output to Chassis(FG) > 100MOhm at 25°C and 70% RH.
Remote Sensing	None.
Input and Output Connections	Molex. (Mating part #)
Safety Agency Approval	UL1950, CSA950, EN60950, Dentori, CE Mark.
Options	Code A (Add cover, additional deratings may apply).
Warranty	2 years.

POWER(W)	OUTPUT 1	OUTPUT 2	OUTPUT 3	MODEL
29.5	+5V@2A	+12V@1.5A	-5V@.3A	**SWT30-525**
31.6	+5V@2A	+12V@1.5A	-12V@.3A	**SWT30-522**
31.6	+5V@2A	+15V@1A	-15V@.3A	**SWT30-5FF**
42.0	+5V@3A	+12V@2A	-5V@.3A	**SWT40-525**
42.0	+5V@3A	+15V@1.5A	-15V@.3A	**SWT40-5FF**
42.6	+5V@3A	+12V@2A	-12V@.3A	**SWT40-522**
62.5	+5V@6A	+12V@2.5A	-5V@.5A	**SWT65-525**
64.5	+5V@6A	+15V@1.8A	-15V@.5A	**SWT65-5FF**
66.0	+5V@6A	+12V@2.5A	-12V@.5A	**SWT65-522**
92.0	+5V@8A	+12V@4A	-5V@.8A	**SWT100-525**
97.6	+5V@8A	+12V@4A	-12V@.8A	**SWT100-522**
100.0	+5V@8A	+15V@3.2A	-15V@.8A	**SWT100-5FF**



DIMENSION:

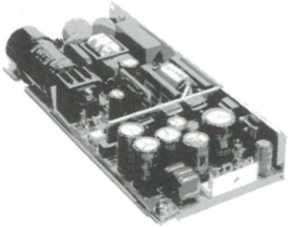
MODEL	A	B	C	D	E	F	G	WEIGHT LBS.
SWT30	3.00 (76.2)	1.20 (30.48)	5.00 (127.0)	2.550 (64.77)	4.550 (115.57)	0.22 (5.58)	0.22 (5.58)	.20
SWT40	3.00 (76.2)	1.40 (35.56)	5.00 (127.0)	2.550 (64.77)	4.550 (115.57)	0.22 (5.58)	0.22 (5.58)	.25
SWT65	3.50 (88.90)	1.77 (45.00)	6.00 (152.40)	3.100 (78.74)	4.80 (121.92)	0.6 (15.24)	0.175 (4.45)	.35
SWT100	4.25 (107.95)	1.77 (45.00)	7.75 (196.85)	3.750 (95.25)	7.250 (184.15)	0.25 (6.35)	0.25 (6.35)	.85

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.

LW Series

Compact dual and triple output power supplies



Low Profile L-Bracket Construction

85-265VAC Universal Input

EMI – FCC Class B & VDE Class B

International Safety Agency Approvals

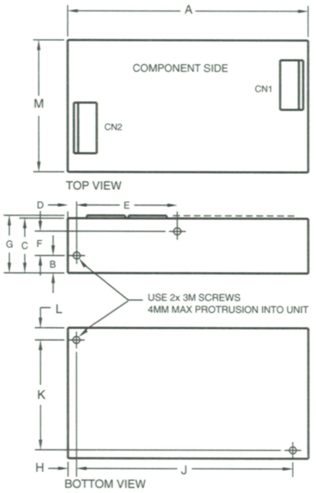
One Year Warranty

Lambda's LW multiple output power supplies feature international safety approvals, universal AC input, and integral EMI filtering. The LW's low profile package, available from 15-50 Watts, makes it ideal for space limited applications. Designed to meet the demands of industrial applications, the LW's high reliability and performance specifications will be an effective solution for your power supply needs.

Similar products		Page
SWT	PC Board	18
SVT	Higher Power	44
JWS	Single Output	24
KWS	PC Board Mount	10

AC Input	85-265VAC, 47-440Hz.
DC Input	110-330VDC.
Fusing	AC input line fuse protects the input wiring to the power supply. Overload of power supply does not cause fuse failure.
EMI	Conforms to FCC Docket 20780 Class A and VDE 0871 Class A.
Output Voltage Adj Range	±5% for CH1 only.
Line Regulation	0.1%.
Load Regulation	0.2%.
Minimum Load	On Channel 1: LWT15H – 0.5A. LWT30H – 0.7A. LWT50H – 1.0A. LWD-50 – 20% on output # 1.
Ripple and Noise	100mV pk-pk on 5V outputs. 150mV pk-pk on 12V and 15V outputs.
Hold-up Time	Output will remain within regulation limits for 20 msec. Typical for all models.
Overshoot	No overshoot at turn-on, turn-off or power failure.
Overvoltage Protection	Standard on main outputs, inverter shut down method, manual reset.
Overload Protection	Automatic electronic current limiting circuit limits short circuit output current to safe, preset value, thereby protecting the load as well as the power supply when direct shorts occur. Sustained short circuit operation for more than 30 seconds may cause damage to the power supply.
Cooling	Convection cooled, no fans or blowers needed.
Operating Temperature Range	0°C-60°C with derating above 40°C.
Temperature Coefficient	Less than 1% on main outputs. Less than 2% on auxiliary outputs.
Humidity	30% to 90% RH (non-condensing).
Isolation Resistance	More than 100M ohms at 25°C. and 70% RH.
Isolation Voltage	Input to chassis – 2kVAC. Input to Output – 3kVAC 1 min. Output to chassis – 500VDC.
Shock	Less than 20G.
Vibration	10 to 55Hz amplitude (sweep 1 min.) less than 2G X, Y, Z 1 hour each.
Input and Output Connections	Connectors. Mating connectors provided with units.
Safety Agency Approval	UL1950, CSA22.2 No:234, IEC950, EN60950 & CE Mark (Low voltage directive).
Warranty	1 year.

POWER(W)	OUTPUT 1	OUTPUT 2	OUTPUT 3	MODEL
Dual Outputs				
14.7	+5V@1.5A	+12V@.6A	–	**LWD-15-0512**
14.7	+5V@1.5A	+24V@.3A	–	**LWD-15-0524**
14.4	+12V@.6A	+12V@.6A	–	**LWD-15-1212**
14.4	+12V@.6A	+24V@.3A	–	**LWD-15-1224**
15	+15V@.5A	+15V@.5A	–	**LWD-15-1515**
29.4	+5V@3A	+12V@1.2A	–	**LWD-30-0512**
29.4	+5V@3A	+24V@.6A	–	**LWD-30-0524**
28.8	+12V@1.2A	+12V@1.2A	–	**LWD-30-1212**
28.8	+12V@1.2A	+24V@.6A	–	**LWD-30-1224**
30	+15V@1A	+15V@1A	–	**LWD-30-1515**
49	+5V@5A	+12V@2A	–	**LWD-50-0512**
49	+5V@5A	+24V@1A	–	**LWD-50-0524**
48	+12V@2A	+12V@2A	–	**LWD-50-1212**
48	+12V@2A	+24V@1A	–	**LWD-50-1224**
48	+15V@1.6A	+15V@1.6A		**LWD-50-1515**
Triple Outputs				
15	+5V@3A	+12V@.6A	-12V@.4A	**LWT-15H-522**
15	+5V@3A	+12V@.6A	-5V@.4A	**LWT-15H-525**
15	+5V@3A	+15V@.6A	-15V@.4A	**LWT-15H-5FF**
30	+5V@5A	+12V@1.2A	-12V@.6A	**LWT-30H-522**
30	+5V@5A	+12V@1.2A	-5V@.6A	**LWT-30H-525**
30	+5V@5A	+15V@1.2A	-15V@.6A	**LWT-30H-5FF**
50	+5V@8A	+12V@1.5A	-12V@1A	**LWT-50H-522**
50	+5V@8A	+12V@1.5A	-5V@1A	**LWT-50H-525**
50	+5V@8A	+15V@1.5A	-15V@1A	**LWT-50H-5FF**



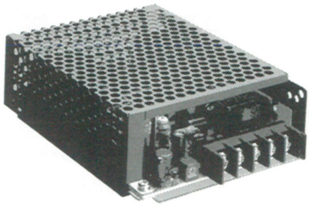
MODEL	A	B	C	D	E	F	G	H	J	K	L	M
LWT-15	5.03 (128.0)	.31 (7.9)	.98 (25.0)	.15 (3.8)	1.811 (46.0)	.433 (11.0)	1.02 (26.0)	.15 (3.8)	3.897 (99.0)	1.988 (50.5)	.21 (5.5)	2.36 (59.9)
LWT-30	6.29 (160.0)	.47 (12.0)	.98 (25.0)	1.77 (45.0)	3.937 (99.9)	.314 (8.0)	1.02 (26.0)	.66 (17.0)	5.433 (138.0)	.905 (23.0)	1.69 (43.0)	2.75 (70.0)
LWT-50	6.29 (159.7)	.35 (8.8)	1.02 (26.0)	.39 (10.0)	4.625 (117.5)	.433 (11.0)	-	1.67 (42.4)	3.602 (91.5)	3.228 (82.0)	.31 (7.8)	3.82 (97.0)
LWD-15	4.32 (109.7)	.31 (7.9)	.98 (25.0)	.15 (3.8)	1.812 (46.0)	.437 (11.0)	1.03 (26.1)	.15 (3.8)	3.890 (98.8)	1.968 (49.9)	.21 (5.3)	2.36 (59.9)
LWD-30	5.75 (146.0)	.48 (12.1)	.98 (25.0)	1.37 (34.9)	3.937 (99.9)	.312 (7.9)	1.03 (26.1)	.28 (7.1)	5.437 (138.0)	.906 (23.0)	1.29 (32.7)	2.36 (59.9)
LWD-50	6.29 (159.7)	.35 (8.8)	.98 (25.0)	.39 (9.9)	4.625 (117.4)	.437 (11.0)	1.03 (26.1)	1.67 (42.4)	5.437 (138.0)	3.234 (82.1)	.31 (7.8)	3.81 (96.7)

WEIGHT:

MODEL	LBS
LWT-15	.50
LWT-30	.70
LWT-50	1.00
LWD-15	.50
LWD-30	.70
LWD-50	1.00

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MM.
2. 4x M3 TAPPED HOLES FOR CUSTOMER MTG.
   SCREWS MUST NOT PROTRUDE INTO P.S. BY MORE THAN .15 (4) MAX.

RWS-A Series Low power industrial supply



Universal AC Input

Conducted EMI to meet FCC Class B

Wide Range Output Adjustment

Worldwide Safety Agency Approvals

Optional DIN Rail Mounting

Lambda's 3 Year Warranty

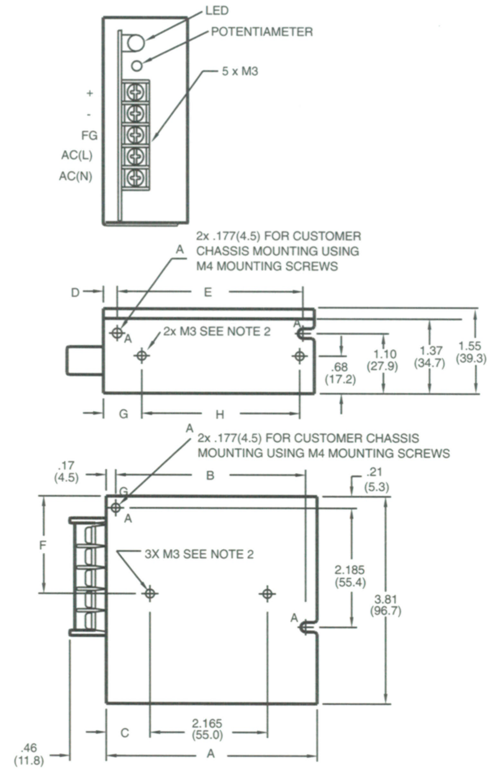
Lambda's RWS-A series meets the demands of today's global Industrial market with universal AC input, international agency approvals including the CE Mark, and FCC Class B EMI compliance. The RWS-A Series is available in 15 & 30 watt packages with output voltages ranging from 5 to 48 volts with a ±10% adjustment range.

Lambda's RWS-A Series will prove to be the Industrial choice for a high quality, reliable power supply backed by a 3-year warranty.

Similar products		Page
JWS	Higher Power	24
KW	Board Mount	10
ZWS	Lower Cost, PCB Mount	14
LW	Multiple Outputs	20
NES/DRP	Higher Power Din Rail	32

AC Input	85-265VAC, 47-440Hz.
DC Input	110-330VDC.
Efficiency	71% on 5.0V, 77% on 12.0-15.0V. 78% on 24.0 - 48.0V.
EMI	Conducted: FCC Class B.
Output Voltage Adj Range	±10%.
Line Regulation	0.4%.
Load Regulation	0.8%.
Ripple and Noise	120mV pk-pk for 5 volts. 150mV pk-pk for 12 & 15 volts. 200mV pk-pk for 24 volts. 300mV pk-pk for 48 volts.
Hold-up Time	20ms (typical).
Overcurrent Protection	Electronic current limiting circuits limits the output current to 105% of the maximum rated current with automatic recovery.
Overvoltage Protection	Non-crowbar, inverter shutdown type OV protection.
Cooling	Convection.
Operating Temperature Range	0°C to +60°C with derating above +50°C.
Storage Temperature	-30°C to +85°C.
Temperature Coefficient	Less than 1%.
Humidity	10% to 90% RH (non-condensing).
Isolation	Input to Output – 3.0kVAC. Input to Chassis (FG) – 2.0kVAC. Output to Chassis (FG) – 500VAC.
Output Status Indicator	A green LED when DC output is "ON".
Input and Output Connections	Barrier strip with clear plastic cover.
DIN Rail Mounting Bracket.	LDIN30
Safety Agency Approval	UL 1950, CSA 2.2 No. 234, EN60950 and CE Mark (Low Voltage Directive)
Warranty	3 years.

		MAX CURRENT AMPS AT			
OUTPUT	**POWER (W)**	**40°**	**50°**	**60°**	**MODEL**
5V (4.5-5.5)	15.0	3.0	3.0	1.80	**RWS-15A-5/A**
	30.0	6.0	6.0	3.60	**RWS-30A-5/A**
12V (10.8-13.2)	15.6	1.3	1.3	0.78	**RWS-15A-12/A**
	30.0	2.5	2.5	1.50	**RWS-30A-12/A**
15V (13.5-16.5)	15.0	1.0	1.0	0.60	**RWS-15A-15/A**
	30.0	2.0	2.0	1.20	**RWS-30A-15/A**
24V (21.6-26.4)	16.8	0.7	0.7	0.42	**RWS-15A-24/A**
	31.2	1.3	1.3	0.78	**RWS-30A-24/A**
48V (43.2-52.8)	14.4	0.3	0.3	0.18	**RWS-15A-48/A**
	28.8	0.6	0.6	0.36	**RWS-30A-48/A**

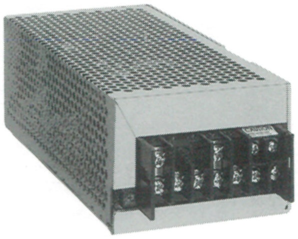


	MODEL	
	RWS15A	RWS30A
A	3.87 (98.5)	4.78 (121.5)
B	3.50 (89.0)	4.40 (112.0)
C	.80 (20.5)	1.24 (31.5)
D	.25 (6.5)	.25 (6.5)
E	3.425 (87.0)	4.13 (105.0)
F	1.79 (45.5)	1.67 (42.5)
G	.70 (18.0)	.84 (21.5)
H	2.913 (74.0)	3.267 (83.0)
Weight lbs.	0.60	0.68

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 4x M3 TAPPED HOLES FOR CUSTOMER MOUNTING SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .23 (6).

JWS Series High quality industrial power supplies



Universal AC Input

Radiated and Conducted EMI

Input Transient Protection

Power Factor and Harmonic Correction

Wide Range Output Adjustment

World wide Safety Agency Approvals

Optional Din Rail Mounting

5 Year Warranty

Lambda's new JWS series meets the demands of today's world wide industrial market with universal input, international agency approvals, and CE Marking. Reducing the risk of system failures the JWS has been engineered to meet input transients and brown-outs in compliance to EN61000-4 (2,-3, -4,-5,-6) as well as meeting EMI Curve B (for both radiated and conducted).

Available in six package sizes from 50-600 watts with output voltages ranging from 2 to 48 volts. Backed by Lambda's five year warranty the JWS series will prove to be the industrial choice for insured reliability and high quality, guaranteeing end-users maximum up-time.

Similar products		**Page**
ZWS	Low Cost PC Board	14
JFS	High Power Single Output	28
SV	Multiple Output	44
RWS-A	Lower Power	22

AC Input	85-265Vac, 47-63Hz.
DC Input	120-330VDC.
Efficiency	61% on 2V, 65% on 3.3V, 74% on 5.0V, 77% on 12.0 -15.0V, 80% on 24.0 -48.0V
Power Factor Correction	0.99 (Typical), EN61000-3-2.
Input Transient Protection	EN61000-4 (2,-3,-4,-5,-6). IEC1000-4 (2,-3,-4,-5,-6). IEC801- (2,-3,-4,-5).
EMI	Conducted and Radiated per: EN55022-B Curve B & FCC Class B.
Output Voltage Adj Range	±10% (+20% ~-10% for 300W/600W).
Line Regulation	0.5%.
Load Regulation	0.8%.
Output Ripple	120 mV p-p for 2, 3.3 & 5 volts. 150 mV p-p for 12, 15 & 24 volts. 200 mV p-p for 48 volts.
Parallel Operation	Active current sharing is achieved through a single wire connection. (300W/600W only).
Hold-up Time	20ms (typical).
Overcurrent Protection	Electronic current limiting circuit limits the output current to 105% of the maximum rated current with automatic recovery.
Overvoltage Protection	Non-crowbar, inverter shutdown type OV protection.
Cooling	Convection, Internal Fan (300W/600W)
Operating Temperature Range	-10°C to +50°C with derating above +40°C. -10°C to +60°C with derating above +50°C (300W/600W).
Storage Temperature	-30°C to +85°C.
Temperature Coefficient	Less than 0.02%.
Isolation	Input to Output – 3.0kVAC. Input to Chassis (FG) – 2.0kVAC. Output to Chassis (FG) – 500VAC.
Output Status Indicator	A green LED when DC output is "ON".
Remote On/Off	An open circuit or a voltage of 2 - 5V applied to the terminals will initiate turn-off. Optional for (50-150W).
Remote Sensing	(100W-600W).
Input and Output Connections	Barrier strip with clear plastic cover.
DIN Rail Mounting Bracket	LDIN50 (JWS50only).
Safety Agency Approval	UL1950, CSA950. EN60950, VDE0160, and CE mark (Low voltage Directive).
Warranty	5 years.

		MAX CURRENT AMPS AT			
OUTPUT	POWER (W)	40°	45°	50°	MODEL
2V (1.8-2.4)	120.0	60.0	60.0	60.0	**JWS300-2**
	240.0	120.0	120.0	120.0	**JWS600-2**
3.3V (2.85-3.63)	33.0	10.0	10.0	8.0	**JWS50-3/A**
	49.5	15.0	12.0	9.0	**JWS75-3/A**
	66.0	20.0	16.0	12.0	**JWS100-3/A**
	99.0	30.0	24.0	18.0	**JWS150-3/A**
	198.0	60.0	60.0	60.0	**JWS300-3**
	396.0	120.0	120.0	120.0	**JWS600-3**
5V (4.50-5.5)	50.0	10.0	10.0	6.0	**JWS50-5/A**
	75.0	15.0	12.0	9.0	**JWS75-5/A**
	100.0	20.0	16.0	12.0	**JWS100-5/A**
	150.0	30.0	24.0	18.0	**JWS150-5/A**
	300.0	60.0	60.0	60.0	**JWS300-5**
	600.0	120.0	120.0	120.0	**JWS600-5**
12V (10.8-13.2)	51.6	4.3	4.3	3.4	**JWS50-12/A**
	75.6	6.3	5.0	3.8	**JWS75-12/A**
	102.0	8.5	6.8	5.1	**JWS100-12/A**
	156.0	13.0	10.4	7.8	**JWS150-12/A**
	324.0	27.0	27.0	27.0	**JWS300-12**
	645.0	53.0	53.0	53.0	**JWS600-12**
15V (13.5-16.5)	52.5	3.5	3.5	2.8	**JWS50-15/A**
	75.0	5.0	4.0	3.0	**JWS75-15/A**
	105.0	7.0	5.6	4.2	**JWS100-15/A**
	150.0	10.0	8.0	6.0	**JWS150-15/A**
	330.0	22.0	22.0	22.0	**JWS300-15**
	645.0	43.0	43.0	43.0	**JWS600-15**
24V (21.6-26.4)	52.8	2.2	2.2	1.7	**JWS50-24/A**
	76.8	3.2	2.5	1.9	**JWS75-24/A**
	108.0	4.5	3.6	2.7	**JWS100-24/A**
	156.0	6.5	5.2	3.9	**JWS150-24/A**
48V (43.2-52.8)	52.8	1.1	1.1	0.88	**JWS50-48/A**
	76.8	1.6	1.3	0.96	**JWS75-48/A**
	100.8	2.1	1.7	1.26	**JWS100-48/A**
	158.4	3.3	2.6	1.98	**JWS150-48/A**

Options for JWS50 - JWS150 only.

JWS 50 - 5 / _ _

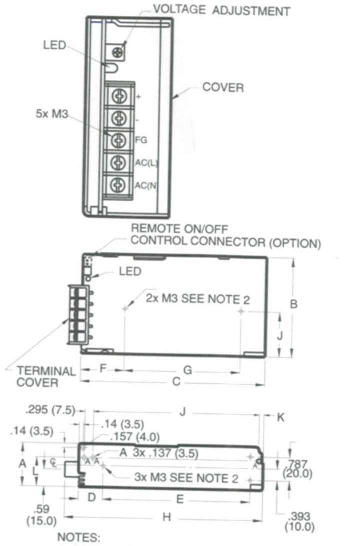
Blank: Standard open frame & terminal block
A: With cover & terminal block – Standard
B: Open frame & Molex connectors – Special order. Consult factory.
C: With cover & Molex connectors – Special order. Consult factory.
R: With remote ON/OFF control. Special order. Consult factory.
Normal output voltage
Maximum output power
Series name

*Connector type is JWS50 & JWS75 only.

JWS Series

High quality industrial power supplies

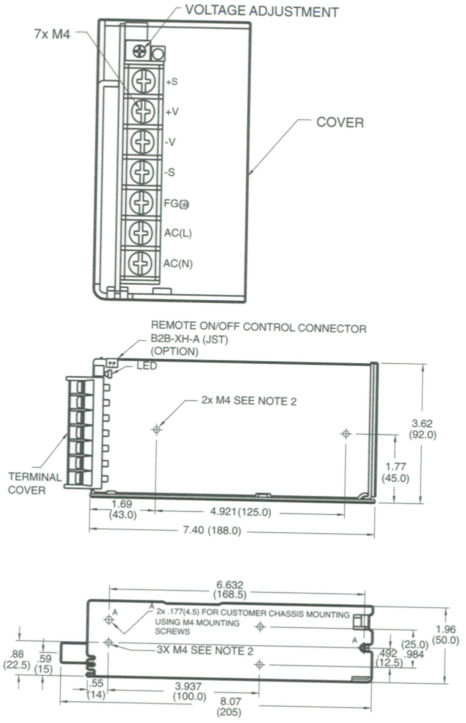
JWS50/JWS75



NOTES:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MM.
2. 5x M3 EMBOSSD, TAPPED AND COUNTERSUNK HOLES FOR CUSTOMER MTG. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORETHAN .23(6).
3. WEIGHT: JWS50-350 GRAMS,
JWS75-450 GRAMS.

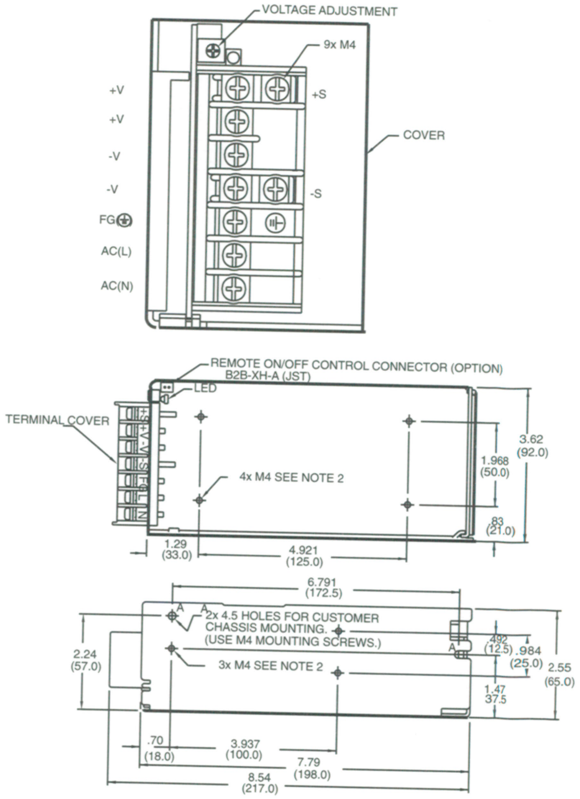
	MODEL	
	JWS50	JWS75
A	1.45 (37.0)	1.65 (42.0)
B	3.346 (85.0)	3.62 (92.0)
C	6.25 (159.0)	6.88 (175.0)
D	.82 (21.0)	.59 (15.0)
E	5.000 (127.0)	4.921 (125.0)
F	1.47 (37.5)	1.18 (30.0)
G	3.937 (100.0)	4.921 (125.0)
H	6.73 (171.0)	7.36 (187.0)
J	5.630 (143.0)	6.259 (159.0)
K	.16 (4.0)	.19 (5.0)
L	.98 (25.0)	1.18 (30.0)

JWS100



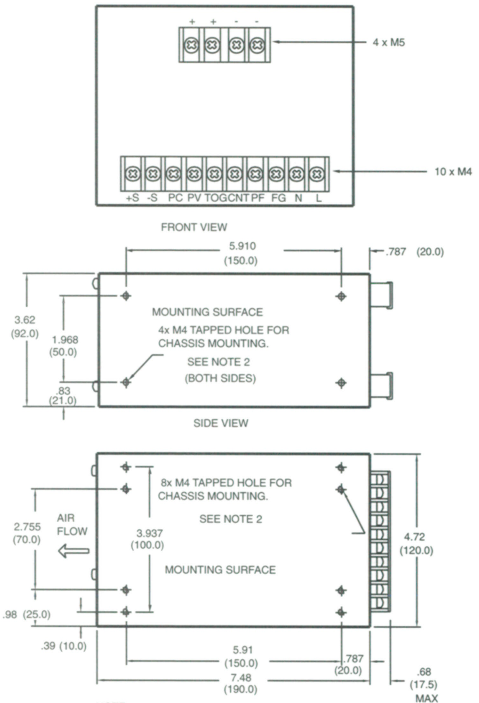
NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 5x M4 EMBOSS, TAPPED AND COUNTERSUNK HOLES FOR CUSTOMER MTG. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .23 (6).
3. WEIGHT: 650 GRAMS.

JWS150



NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 7x EMBOSS, TAPPED AND COUNTERSUNK HOLES FOR CUSTOMER MTG. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .23 (6.0).
3. WEIGHT: 850 GRAMS

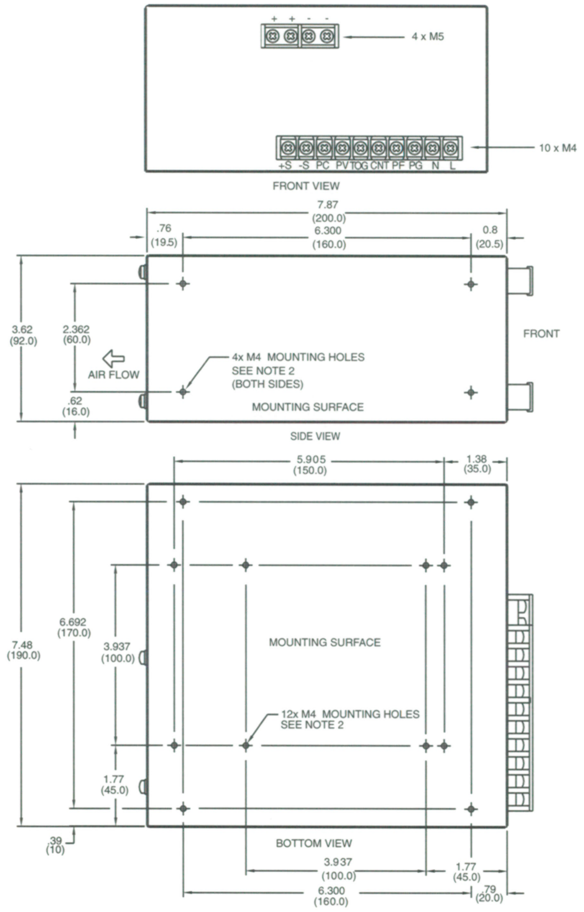
JWS300



NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 16x M4 TAPPED HOLES FOR CUSTOMER MOUNTING, SCREWS MUST NOT PROTRUDE INTO P.S. MORE THAN .236 (6MM)
3. CUSTOMER TO PROVIDE ADEQUATE CLEARANCE NEAR VENT HOLES FOR AIR FLOW.
4. WEIGHT: NET 5.0 LBS, SHIPPING 6.0 LBS.

JWS600



NOTES:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 12x M4 TAPPED HOLES FOR CUSTOMER MOUNTING, SCREWS MUST NOT PROTRUDE INTO P.S. MORE THAN .236 (6MM)
3. CUSTOMER TO PROVIDE ADEQUATE CLEARANCE NEAR VENT HOLES FOR AIR FLOW.
4. WEIGHT: NET 9.0 LBS, SHIPPING 10.0 LBS.

JFS Series High power bulk AC-DC power supplies

Universal AC Input

Wide Range Output Adjustment

Power Factor & Harmonic Correction

Input Transient Protection

Worldwide Safety Agency Approvals

Single Wire Current Sharing

Optional DIN Rail Mounting

Lambda's 3 Year Warranty

The new JFS Series utilizes Lambda's traditional design techniques ensuring high performance and reliable operation in today's demanding Industrial applications. The JFS Series continues to operate through surges, sags, spikes and lighning strike.

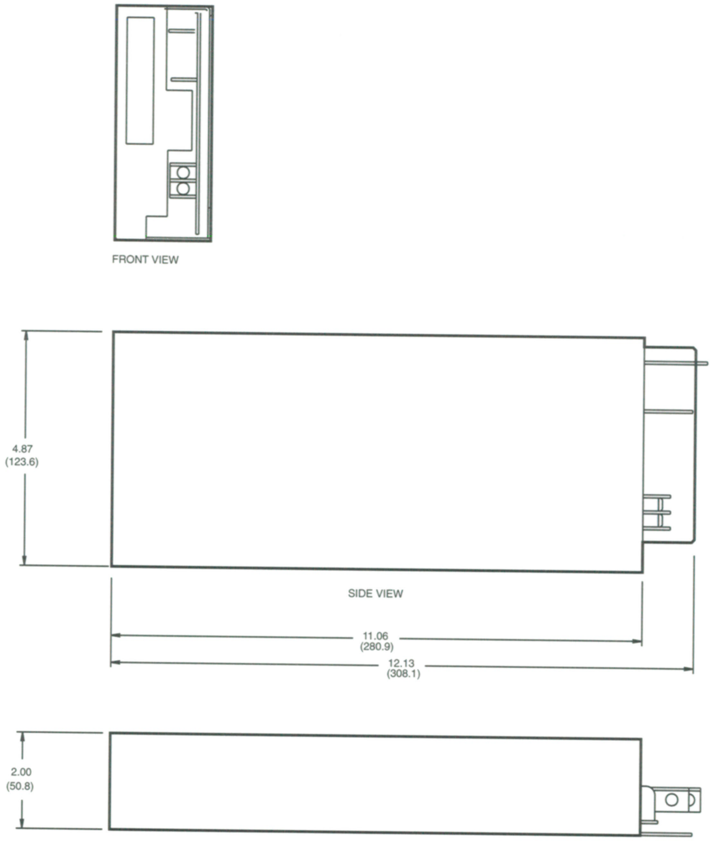
Available in five package sizes from 500-2000 watts with nominal outputs of 24 & 48 volts. Built-in features include Remote ON/OFF, AC Power Fail, DC Good, Input Transient Protection and Active Current Sharing. The JFS Series is designed for worldwide market, the JFS features Power Factor & Harmonic Correction, Universal AC Input, International Agency Approvals and the CE Mark.

Similar products		Page
UF	Low Voltage Outputs	50
LZS/SE	Harsh Environment	58
FE	Hot Plug	66
JWS	Lower Power, Single Output	24

AC Input	85 -265VAC, 47-63Hz (170-265VAC for JFS-2000).
DC Input	120-330VDC.
Efficiency	75% (typical).
Power Factor Correction	0.99 (Typical), IEC1000-3-2.
Input Transient Protection	EN61000-4 (-2,-3,-4,-5,-6). IEC1000-4 (-2,-3,-4,-5,-6). IEC301- (-2,-3,-4,-5).
EMI	Conducted and Radiated per: EN55022-Curve A & FCC Class A.
DC Output Controls	Active current sharing is achieved through a single wire connection.
Output Voltage Adj Range	Refer to the table.
Line Regulation	Less than 1%.
Load Regulation	Less than 1%.
Ripple and Noise	250 mV pk-pk for 24 volts. 500 mV pk-pk for 48 volts.
Hold-up Time	16ms (typical).
Overcurrent Protection	Electronic current limiting circuit limits the output current to less than 110% of the full power rating with automatic recovery.
Overvoltage Protection	Non-crowbar, non-latching inverter shutdown type OV.
Cooling	Internal Fan.
Operating Temperature Range	1.0% from no load to full load. 85-265VAC max.
Storage Temperature	-40°C to +85°C.
Humidity	10 to 90% RH (non-condensing).
Isolation	Input to Output – 3.0kVAC. Input to Chassis (FG) – 2.0kVAC. Output to Chassis (FG) – 500VDC.
Vibration and Shock	IEC68-2-6.
Shock	IEC68-2-27.
Output Good Signal	Conductance Good Signal; Secondary referenced, Open Collector Signal = Good.
Input Good Signal	Conductance Good Signal; Secondary referenced, Open Collector Signal = Active.
Output Status Indicator	A green LED when DC output is "ON".
Remote On/Off	Secondary referenced, Open enables the output.
Remote Sensing	Compensates for 0.25 VDC per leg.
Input and Output Connections	Barrier strip with cover or bus-bars.
Safety Agency Approval	UL1950, CSA22.2 No. 234, EN60950, IEC950 and CE Mark (Low Voltage Directive).
Din Rail Mounting Bracket	Consult factory.
Warranty	3 years.

		MAX CURRENT AMPS AT				
OUTPUT	POWER (W)	40°	50°	60°	71°	MODEL
24V (20.0-29.0)	500	20.8	20.8	15.6	10.4	**JFS-0500-24**
	750	31.2	31.2	23.4	15.6	**JFS-0750-24**
	1000	41.6	41.6	31.2	20.8	**JFS-1000-24**
	1500	62.5	62.5	46.8	31.2	**JFS-1500-24**
	2000	83.3	83.3	62.4	41.6	**JFS-2000-24**
48V (36.0-56.0)	500	10.4	10.4	7.8	5.2	**JFS-0500-48**
	750	15.6	15.6	11.7	7.8	**JFS-0750-48**
	1000	20.8	20.8	15.6	10.4	**JFS-1000-48**
	1500	31.2	31.2	23.4	15.6	**JFS-1500-48**
	2000	41.6	41.6	31.2	20.8	**JFS-2000-48**

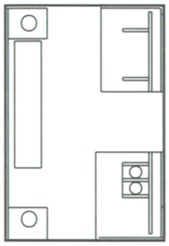
JFS500



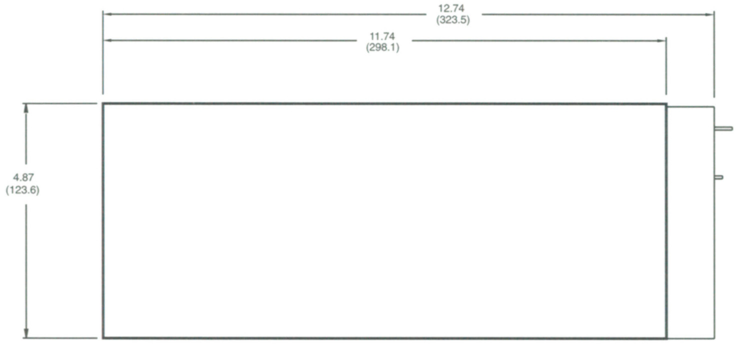
NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. WEIGHT: NET 6.0 LBS, SHIPPING 7.0 LBS.

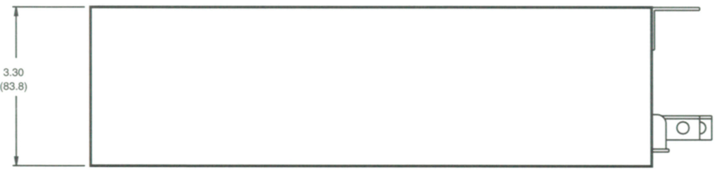
JFS750/1000



FRONT VIEW



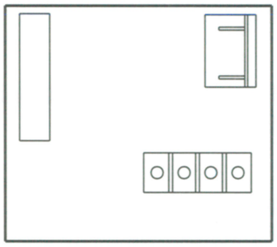
SIDE VIEW



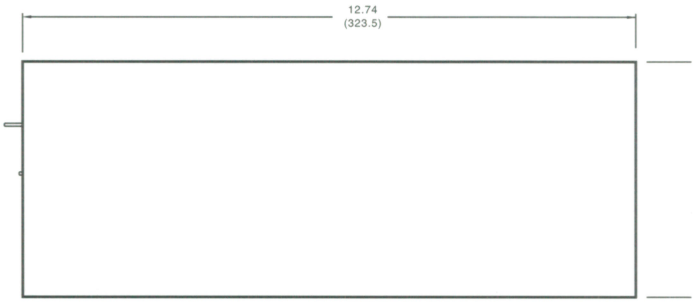
BOTTOM VIEW

NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. WEIGHT: NET 7.0 LBS, SHIPPING 8.0 LBS.

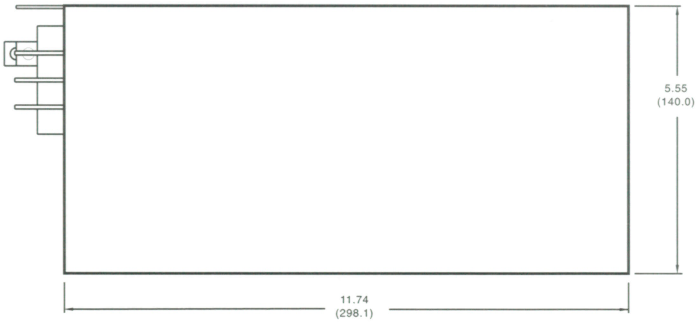
JFS1500/2000



FRONT VIEW



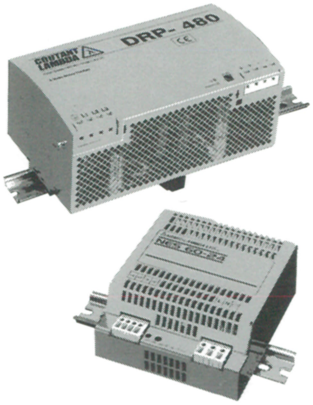
SIDE VIEW



BOTTOM VIEW

NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. WEIGHT: NET 9.0 LBS, SHIPPING 10.0 LBS.

NES/DRP Series Industrial DIN rail power supplies



DIN Rail Mounting Standards

Radiated & Conducted EMI

Input Transient Protection

Single & Three Phase AC Input

Robust design for Industry

Power Factor & Harmonic Correction

Worldwide Safety Agency Approvals

Non Periodic Overvoltage

Lambda's 2 Year Warranty

Low Profile or Less Panel Space

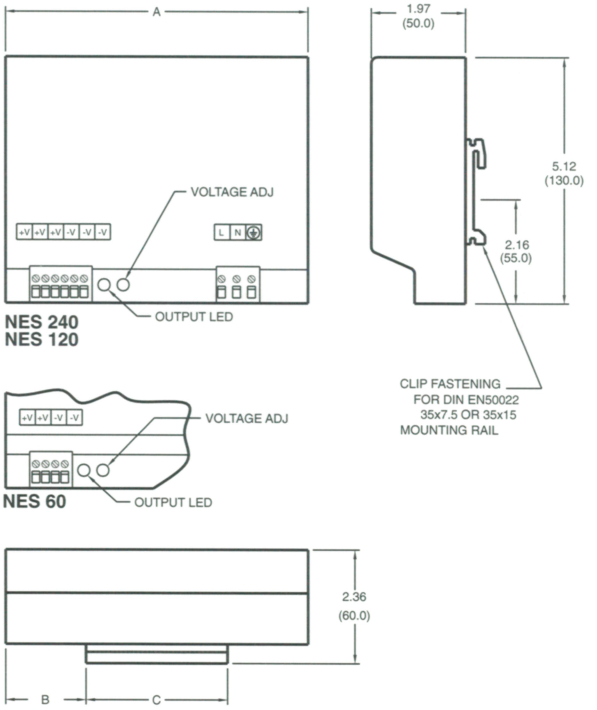
Lambda's new NES & DRP Series, Din Rail Mountable power supplies were developed to deliver the highest performance and reliability in low profile and standard packaging from 60 to 960 Watts. Engineered to handle severe input transients and brown outs, typical of factory settings, the NES & DRP Series power supplies are in compliance with IEC1000-4 (-2, -3, -4, -5, -6). Power Factor & Harmonic Correction is also incorporated, improving input power quality, line regulation, AC noise immunity and hold-up time.

With the global market in mind, the NES & DRP Series power supplies feature worldwide safety approvals including: UL1950, EN60950 and the CE Mark. Through Lambda's advanced design techniques and global support, the NES & DRP Series power supplies will prove to be the Industry's choice for High reliability and quality, ensuring maximum up-time.

Similar products		**Page**
JWS	Chassis Mount & Low Voltages	24
JFS	High Power	28
FE	Hot Plug	66
RWSA	Low Power Din Rail	22

AC Input	NES: 85-265VAC continuous (47-63Hz). DRP: -1 Model - Single Phase 110/230VAC, 47-63Hz. -3H Models - Three Phase 480VAC, 47-63Hz.
Efficiency	80% typical.
Power Factor Correction	NES: IEC1000-3-2; DRP: EN61000-3-2
Input Transient Protection	NES: IEC1000-4 (-2, -3, -4, -5, -6). DRP: EN61000-4 (-2, -3, -4, -5, -6).
EMI	Conducted and Radiated: EN55022-B Curve B & FCC Class B.
Output Voltage Adj Range	±10%.
Line Regulation	NES: 0.3%. DRP: Less than 1%.
Load Regulation	NES: 0.6%. DRP: Less than 2%.
Ripple and Noise	NES: 150mV pk-pk @ 24V DRP: Less than 20mV pk-pk.
Hold-up Time	NES: 20 ms (typical); DRP: Greater than 11ms.
Overcurrent Protection	Electronic current limiting circuit limits the output current to 110% of the maximum rated current with automatic recovery.
Overvoltage Protection	Non-crowbar, inverter shutdown type OV protection.
Cooling	Convection cooled.
Operating Temperature Range	0°C to +60°C with derating above +50°C. i.e. 0°C to +50°C ~100%. +60°C ~60%.
Storage Temperature	-30°C to +85°C.
Humidity	30% to 90% RH (non-condensing).
Isolation	Input to Output – 3.0kVAC. Input to Chassis (FG) – 2.0kVAC. Output to Chassis (FG) – 500VAC.
Output Status Indicator	A green LED when DC output is "ON".
Mounting	DIN Rail Standard EN50022, capable of mounting to a 35 x 7.5 (mm) or 35 x 15 (mm) rail.
Safety Agency Approval	NES: UL1950, CSA950, EN60950 and the CE Mark (Low Voltage Directive). DRP: EN60950, VDE0160 and the CE Mark (Low Voltage Directive).
Warranty	2 years.

		MAX CURRENT AMPS AT			
OUTPUT	POWER (W)	40°	50°	60°	MODEL
24V(24.0-28.0)	60	2.5	2.5	–	**DRP-60-1**
	120	5.0	5.0	–	**DRP-120-1**
	240	10.0	10.0	–	**DRP-240-1**
	480	20.0	20.0	–	**DRP-480-1**
	480	20.0	20.0	–	**DRP-480-3H**
	60	2.5	2.5	2.0	**NES60-24**
	120	5.0	5.0	4.0	**NES120-24**
	240	10.0	10.0	8.0	**NES240-24**



DIMENSIONS:

MODEL	A	B	C
NES60	4.52 (115.0)	1.28 (32.5)	1.97 (50.0)
NES120	6.29 (160.0)	1.67 (42.5)	2.95 (75.0)
NES240	8.27 (210.0)	2.17 (55.0)	3.94 (100.0)

WEIGHT:

MODEL	LBS
NES60	1.24
NES120	1.81
NES240	2.54

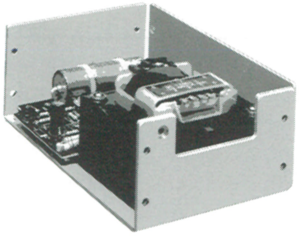
DRP DIMENSIONS ONLY:

MODEL	INCHES	MM
DRP 60	4.88 x 1.93 x 4.00	124 x 49 x101.5
DRP 120	4.92 x 2.56 x 4.06	125 x 65 x 103
DRP 240	5.39 x 4.92 x 4.06	137 x 125 x 103
DRP 480	9.01 x 4.00 x 4.88	229 x 101.5 x124

NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.

H Series

Low cost linear power supplies



Conducted EMI per FCC Class B & VDE0871 Level B

Worldwide Voltage Taps

Low Output Ripple

Excellent Line & Load Regulation

Operating Ambient up to +70°C

Industry Standard Package Sizes

Worldwide Safety Agency Approvals

Lambda's 2 Year Warranty

Lambda's new H Series of linear power supplies feature very low output ripple and excellent regulation for sensitive applications.

Twenty models with single, dual and triple outputs are available in eight Industry Standard package sizes. They deliver output voltages of 5 to 28 volts and power levels from 15 to 115 watts. The H Series is designed for worldwide use being UL recognized, CSA certified, TUV approved, and carrying the CE mark.

Similar products		Page
LN/LD	Low Noise, Higher Power	36
JWS	High Density Efficiency Switcher	24
ZW	Multiple Output Switcher	14

AC Input	100/120/220/230/240 VAC, 47-63 Hz (Derate 10% for 50Hz. operation).
Efficiency	5V models 45%,12V/15V models 55%, 24V models 60%.
Transient Response	50µs for 50% load change.
EMI	FCC Class B, VDE 0871 Level B.
Output Voltage Adj Range	±5% for all outputs (except channels 2 & 3 on triple output models).
Line Regulation	±0.05% for 10% line change.
Load Regulation	±0.05% for 50% load change.
Ripple and Noise	<3mV pk to pk.
Overcurrent Protection	Foldback with automatic recovery.
Overvoltage Protection	Standard on 5V outputs set at 6.2V ±0.4V. Optional OVP circuit available – OVP12.
Cooling	Natural Convection.
Operating Temperature Range	0°C to +50°C, derate 3% per °C above 50°C up to 70°C.
Storage Temperature	-55°C to +85°C.
Temperature Coefficient	±0.01% per °C.
Humidity	5% to 95% RH (non-condensing).
Leakage Current	Less than 50µA.
Vibration and Shock	MIL-STD-810C, Method 514.
Shock	MIL-STD-810C, Method 516.
Remote Sensing	All single output models, HDC12 & HDC15 and channel 1 on triple output models.
Safety Agency Approval	UL1950, CSA950, EN60950, CE Mark.
Warranty	2 years.

OUTPUT	POWER (W)	MAX CURRENT AMPS AT			MODEL
		50°	60°	71°	
Single Output					
5V (4.75-5.25)	15.0	3.0	2.1	1.2	**HSB-5-3-OVP**
	30.0	6.0	4.2	2.4	**HSC-5-6-OVP**
	45.0	9.0	6.3	3.6	**HSN-5-9-OVP**
	60.0	12.0	8.4	4.8	**HSD-5-12-OVP**
12V (11.4-12.6)	20.4	1.7	1.2	0.7	**HSB-12-1.7**
	40.8	3.4	2.4	1.4	**HSC-12-3.4**
	61.2	5.1	3.6	2.0	**HSN-12-5.1**
15V (14.25-15.75)	22.5	1.5	1.1	0.6	**HSB-15-1.5**
	45.0	3.0	2.1	1.2	**HSC-15-3**
	67.5	4.5	3.2	1.8	**HSN-15-4.5**
24V (22.8-25.2)	28.8	1.2	0.8	0.5	**HSB-24-1.2**
	57.6	2.4	1.7	1.0	**HSC-24-2.4**
	86.4	3.6	2.5	1.4	**HSN-24-3.6**
	115.2	4.8	3.4	1.9	**HSD-24-4.8**
28V	28	1.0	0.7	0.4	**HSB-28-1.0**
	56	2.0	1.4	0.8	**HSC-28-2.0**
	84	3.0	2.1	1.2	**HSN-28-3.0**
	112	4.0	2.8	1.6	**HSD-28-4.0**
Dual Outputs					
+12/15V	24	1.0/0.8	0.7/0.56	0.4/0.32	**HDA-12-15**
-12/15V		1.0/0.8	0.7/0.56	0.4/0.32	
+12/15V	40	1.8/1.5	1.26/1.05	0.72/0.6	**HDB-12-15**
-12/15V		1.8/1.5	1.26/1.05	0.72/0.6	
12V*	80	3.4	2.4	1.4	**HDC-12**
12V*		3.4	2.4	1.4	
15V*	80	3.0	2.1	1.2	**HDC-15**
15V*		3.0	2.1	1.2	
Triple Outputs					
5V*	40	3.0			**HTC1**
+12/15V		1.0/0.8	0.7/0.56	0.4/0.32	
-12/15V		1.0/0.8	0.7/0.56	0.4/0.32	
5V*	70	6.0			**HTD1**
+12/15V		1.7/1.5	1.2/1.05	0.68/0.6	
-12/15V		1.7/1.5	1.2/1.05	0.68/0.6	
Ovp Option					
N/A	12				**OVP12**

*Isolated outputs

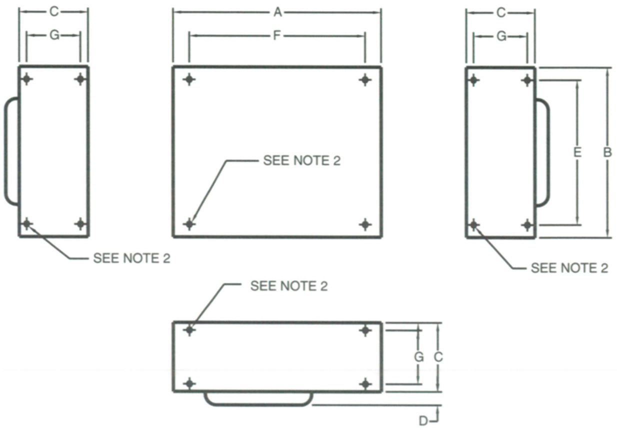
DIMENSIONS:

MODEL	A	B	C	D	E	F	G
HSB A	4.84 (123.0)	3.99 (101.4)	1.61 (41.0)	.37 (9.3)	3.370 (85.6)	4.141 (105.2)	-
HSC B	4.87 (123.5)	5.63 (142.6)	2.50 (62.8)	.44 (11.2)	4.875 (124.0)	4.118 (104.6)	-
HSN C	7.00 (178.0)	4.87 (123.7)	2.75 (69.9)	.56 (14.2)	4.125 (104.8)	6.250 (158.5)	1.248 (31.7)
HSD I	9.00 (229.0)	4.87 (123.7)	2.75 (70.0)	.58 (14.7)	4.125 (104.8)	8.000 (203.0)	1.250 (32.0)
HDA H	4.00 (102.0)	6.50 (165.0)	1.62 (41.5)	.45 (11.5)	5.750 (146.0)	3.375 (86.0)	-
HDB D	4.87 (124.0)	7.00 (178.0)	2.50 (63.5)	.75 (19.0)	6.250 (159.0)	4.125 (104.8)	1.250 (32.0)
HDC I	9.00 (229.0)	4.87 (124.0)	2.75 (70.0)	.58 (14.7)	4.125 (104.8)	8.000 (203.0)	1.250 (32.0)
HTC F	10.25 (260.0)	4.00 (102.0)	2.50 (63.5)	.75 (19.0)	3.375 (86.0)	9.250 (235.0)	1.250 (32.0)
HTD G	11.00 (279.5)	4.87 (124.0)	2.75 (70.0)	.57 (14.5)	4.125 (104.8)	7.500 (190.5)	1.250 (32.0)

NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. .188 (4.8) HOLES FOR CUSTOMER MOUNTING.

WEIGHT:

MODEL	LBS
HSB	2.43
HSC	4.0
HSN	7.28
HSD	7.5
HDA	2.21
HDB	4.41
HDC	7.5
HTC	5.07
HTD	8.82



LN/LD Series Low noise linear power supplies

MIL-STD-810C Specifications

Lowest Output Ripple & Noise

High Line & Load Stability

Rugged Construction

High Temperature Operation

Convection Cooling

5 Year Warranty

Lambda's LD and LN Series linear power supplies are designed to meet the ever increasing requirements of high reliability and ease of use in today's modern equipment. They feature extremely low output ripple and noise – ideal for medical and industrial applications, and test equipment employing sensitive analog circuits.

Lambda's LD and LN Series are manufactured using only the highest grade components. Our stringent in-house component derating ensures that the LD and LN Series provide the highest reliability for any low-noise application.

Similar products		**Page**
LZS	Low noise switcher and higher power	58
JWS	General Purpose Switcher	24
H	Low Cost Linear	34

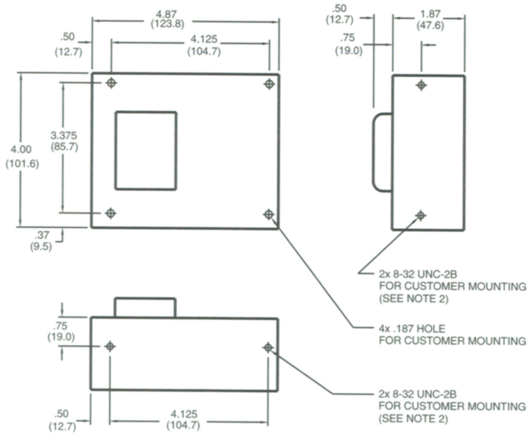
AC Input	105-127VAC, 210-254VAC (by transformer tap change), 47-440Hz. With derating (consult factory).
EMI	MIL-I-6181D – Conducted and radiated EMI with one output terminal grounded.
DC Output Controls	LD Series: volt per volt. LN Series: volt per volt (not on LND).
Line Regulation	LD Series: 0.005% +0.5mV. LN Series: 0.1% (0.15% for LNS-Z).
Load Regulation	LD Series: 0.005% +0.5mV. LN Series: 0.1% (0.15% for LNS-Z).
Ripple and Noise	LD Series: 150uV RMS, 1mV pk-pk. LN Series: 1.5mV RMS, 5mV pk-pk.
Overshoot	No overshoot on turn-on, turn-off or power failure.
Overvoltage Protection	Overvoltage protection module crowbars output when trip level is exceeded – standard on all 5V models, except the LNS-P-5.
Overload Protection	Automatic electronic current limiting circuit limits the output current to a preset value, thereby providing protection for the load as well as the power supply.
Cooling	All units are convection cooled. No external heat sinking or forced air is required.
Operating Temperature Range	Continuous operation from 0°C to +71°C on LN Series and 0°C to +60°C on LD Series with suitable derating above +40°C.
Storage Temperature	-55°C to +85°C.
Fungus Proofing	No fungi nutrient material used.
Temperature Coefficient	LD Series: 0.01% + 10uV per °C. LN Series: 0.03% per °C.
Isolation	Minimum, 10 Megohm isolation from DC to ground at 750VDC.
Remote Sensing	Provision is made for remote sensing to eliminate the effect of power output lead resistance on DC regulation.
Resistive Programming	LD Series: 1000 ohms/volt. LN Series: 200 ohms/volt (not on LND).
Thermal Protection	Thermostat - automatically reset when overtemperature condition is eliminated.
Mounting	LN/LDS-Y, X, W – three mounting surfaces, three mounting positions. LN/LDS-P – one mounting surface, one mounting position.
Input and Output Connections	Heavy-duty screw terminals on printed circuit board.
Safety Agency Approval	UL 1950, CSA 950.
Warranty	5 years.

		MAX CURRENT AMPS AT					
OUTPUT	POWER (W)	30°	40°	50°	60°	71°	MODEL
Single Output							
5V (4.75-5.25)							
	14	2.70	2.70	2.40	2.10	1.50	**LNS-Z-5-OV**
	28	5.40	5.40	4.60	3.80	2.80	**LNS-Y-5-OV**
	45	8.50	8.50	7.60	6.20	4.50	**LNS-X-5-OV**
	63	11.90	11.90	10.40	8.50	6.40	**LNS-W-5-OV**
	110	20.90	20.90	18.50	15.70	12.40	**LNS-P-5**
12V (11.4-12.6)							
	20	1.55	1.55	1.45	1.40	1.20	**LNS-Z-12**
	45	3.60	3.60	3.15	2.60	2.00	**LNS-Y-12**
	70	5.50	5.50	4.70	3.80	2.80	**LNS-X-12**
	91	7.20	7.20	6.10	5.00	3.60	**LNS-W-12**
	167	13.30	13.30	11.80	9.50	6.95	**LNS-P-12**
15V (14.25-15.75)							
	20	1.30	1.30	1.20	1.10	0.90	**LNS-Z-15**
	48	3.10	3.10	2.80	2.35	1.80	**LNS-Y-15**
	74	4.70	4.70	4.10	3.35	2.40	**LNS-X-15**
	103	6.55	6.55	5.70	4.70	3.15	**LNS-W-15**
	180	11.40	11.40	10.10	8.10	6.00	**LNS-P-15**
24V (22.8-25.2)							
	20	0.81	0.81	0.68	0.55	0.36	**LNS-Z-24**
	53	2.10	2.10	1.90	1.50	1.00	**LNS-Y-24**
	82	3.25	3.25	2.75	2.00	1.20	**LNS-X-24**
	116	4.60	4.60	3.90	3.10	2.10	**LNS-W-24**
	217	8.60	8.60	7.60	6.40	4.80	**LNS-P-24**
28V (26.6-29.4)							
	22	0.75	0.75	0.60	0.45	0.32	**LNS-Z-28**
	53	1.80	1.80	1.65	1.35	0.90	**LNS-Y-28**
	85	2.90	2.90	2.50	1.50	1.00	**LNS-X-28**
Wide Range							
0-7V (Adjustable)							
		–	3.40	2.85	1.80	–	**LDS-Y-01**
		–	4.10	3.40	2.60	–	**LDS-X-01**
		–	9.00	8.00	7.10	–	**LDS-P-01**
0-18V (Adjustable)							
		–	1.80	1.60	0.90	–	**LDS-Y-02**
		–	1.95	1.60	1.30	–	**LDS-X-02**
		–	4.30	3.80	3.10	–	**LDS-P-02**
0-32V (Adjustable)							
		–	1.10	0.95	0.60	–	**LDSY-03**
		–	2.50	2.40	2.20	–	**LDS-P-03**
Dual Output							
±15 to		–	0.50	0.50	0.40	0.30	**LND-Z-152**
±12V		–	0.50	0.50	0.40	0.30	
±15 to		–	1.20	1.00	0.80	0.50	**LND-Y-152**
±12V		–	1.00	0.90	0.70	0.40	
±15 to		–	2.10	1.80	1.40	0.90	**LND-X-152**
±12V		–	2.00	1.60	1.20	0.80	
±15 to		–	3.00	2.80	2.30	1.80	**LND-W-152**
±12V		–	2.80	2.50	2.10	1.40	
±15 to		–	5.00	4.50	3.70	2.70	**LND-P-152**
±12V		–	4.40	3.80	3.10	2.40	

For use without cover increase output by 15%.

LN/LD Series Low noise linear power supplies

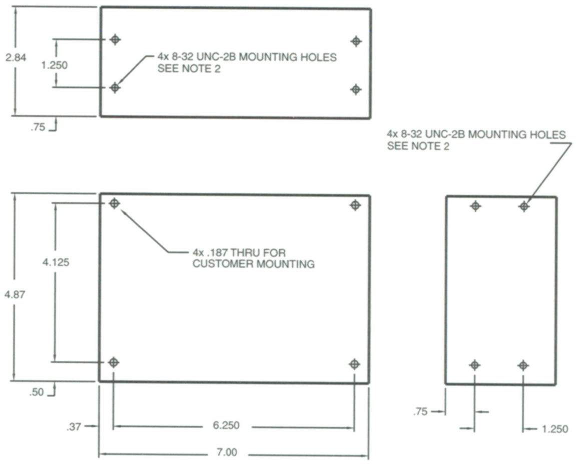
LNS-Z/LND-Z



NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 8-32 UNC-2B TAPPED HOLES FOR CUSTOMER MTG. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES TO ALLOW FOR AIR FLOW.
4. WEIGHT: NET 3 LBS, SHIP 3 1/4 LBS.

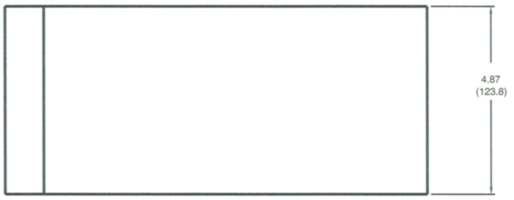
LDS-X/LNS-X/LND-X



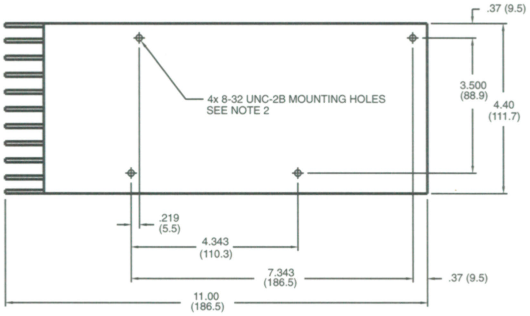
NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 8-32 UNC-2B TAPPED HOLES FOR CUSTOMER MTG. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES TO ALLOW FOR AIR FLOW.
4. WEIGHT: 7 3/4 LBS

LND-P/LNS-P



SIDE VIEW



BOTTOM VIEW

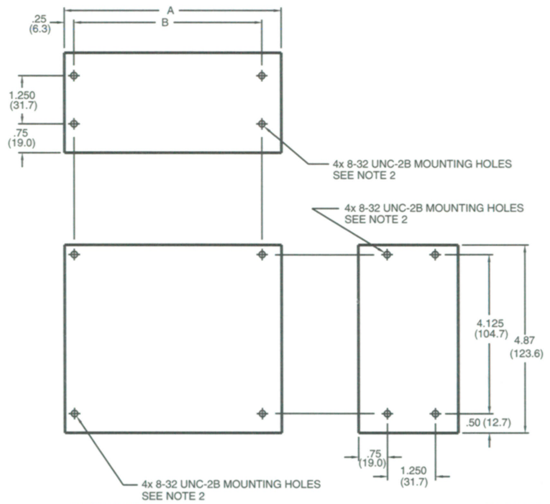
WEIGHT:

MODEL	NET LBS	NET LBS
LND-P	14	15
LNS-P	15 1/2	17

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 4x 8-32 UNC-2B TAPPED HOLES FOR CUSTOMER MTG.
   SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).

LDS-W/LNS-W/LND-W LDS-Y/LNS-Y/LND-Y



DIMENSIONS:

MODEL	A	B	C	D
LDS-W,LNS-W,LND-W	9.00 (228.6)	8.000 (203.2)	.50 (12.7)	2.84 (72.1)
LDS-Y,LNS-Y,LND-Y	5.62 (142.7)	4.875 (123.8)	.56 (14.2)	2.59 (65.7)

WEIGHT:

MODEL	NET LBS	SHIP LBS
LDS-W,LNS-W,LND-W	7 3/4	8 1/4
LDS-Y,LNS-Y,LND-Y	5	5 1/2

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 8-32 UNC-2B TAPPED HOLES FOR CUSTOMER MTG.
   SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES
   TO ALLOW FOR AIR FLOW.

LMS Series Zero-up power supplies

Any Output Voltage 0-300VDC

Output Current 0-100A

Remote Programmable Voltage and Current

Constant Current or Voltage

Compact Size

Remote On/Off

AC Line Cord

Series and Parallel Operation

3 Year Warranty

Lambda's Zero-up LMS Series provides a standard solution for any output voltage or current programmable remotely for any test application. The LMS Series is also designed to operate in constant current or voltage modes depending on the load impedance like battery charging or precision plating.

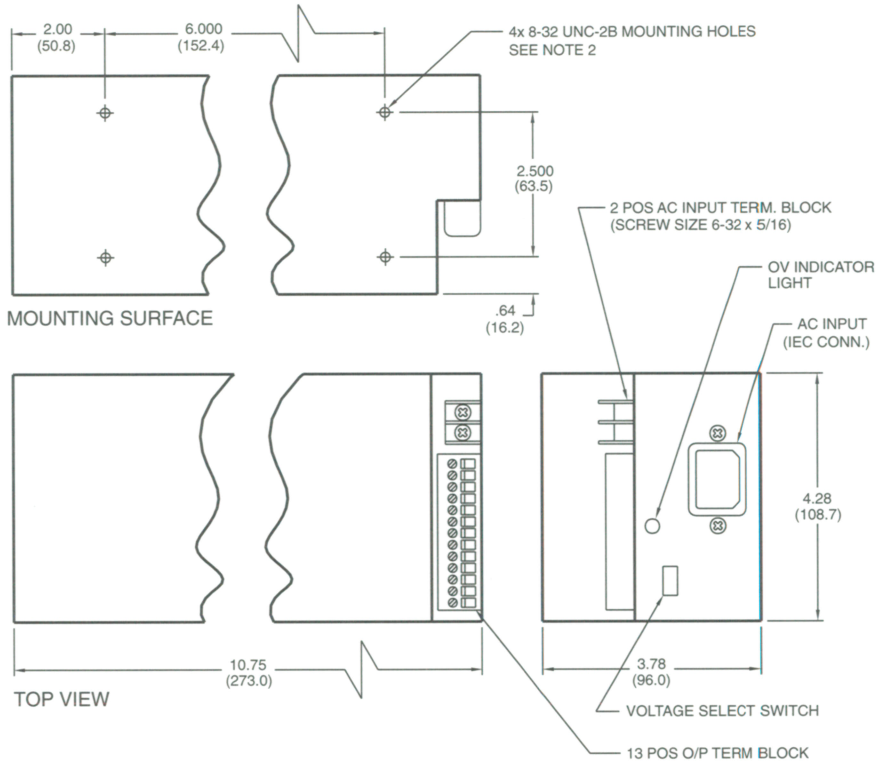
The LMS line supports both parallel and series operation for output power scalability or high voltage output capabilities, respectively.

Similar products		**Page**
LLS	Metering and Keypad Control	98
JWS	Fixed Output Voltage	24
JFS	Fixed Output Voltage	28

AC Input	85-132VAC or 170-265VAC, user selectable, 47-440Hz.
Efficiency	LMS6000 65%, LMS9000 75%.
Inrush Current Limiting	20A @110VAC, 40A @220VAC input.
Conducted EMI	FCC 20780 and VDE 0871 Class A.
DC Output Controls	Simple screwdriver adjustment over the entire voltage range.
Remote Programming Voltage	volt per volt or 0-5 volt isolated signal for zero to full voltage.
Remote Programming Current	0-5V isolated signal for zero to Io (max).
Line Regulation	0.05% Voltage, 0.3% Current.
Load Regulation	0.05% Voltage 0 to full load current. 0.3% current 0 to rated voltage.
Ripple and Noise	5mV RMS, 35 mV pk-pk on 8V and 18V models. 10 mV RMS, 75mV pk-pk on 40V and 60V models. 20mV RMS, 150mV pk-pk on 120V and 300V models. 35mV RMS.
Current Ripple	1.0% Io (max) RMS.
Constant Current	Programmable Current limit (Automatic Crossover) 5% to full rated current.
Parallel Operation	Designed for Series and Parallel operation.
Overvoltage Protection	Built-in, adjustable overvoltage. AC recycle to reset.
Cooling	All models are fan cooled.
Operating Temperature Range	0°C to 71°C with derating from 40°C to 71°C.
Storage Temperature	-55°C to +85°C.
Temperature Coefficient	0.03%/°C.
Led Status Indicator	Overvoltage and overtemperature indicator on rear panel.
Remote On/Off	TTL compatible isolated source or contact closure. LOW=ON, HIGH=OFF.
Resistive Programming	Customer adjustable from 200ohm/volt to 1000 ohm/volt. 1000 ohm/volt on the LMS-6300 and LMS-9300.
Thermal Protection	Internal shutdown for excessive internal temperature. When shutdown occurs, a front panel LED indicator will turn on. AC recycling required for reset.
Safety Agency Approval	UL 1950, TUV/EN 60950, CSA 1402C.
Accessories	Rack adapters and line cords available.
Warranty	3 years.

		MAX CURRENT AMPS AT				
OUTPUT	**POWER (W)**	**40°**	**50°**	**60°**	**71°**	**MODEL**
0-8V	160	20.00	20.00	16.50	13.50	**LMS-6008**
	800	100.00	90.00	78.00	57.00	**LMS-9008**
0-18V	160	9.00	9.00	8.20	6.60	**LMS-6018**
	800	45.00	40.00	33.00	25.00	**LMS-9018**
0-40V	160	4.00	4.00	3.80	3.10	**LMS-6040**
	800	20.00	18.00	15.00	11.00	**LMS-9040**
0-60V	160	2.80	2.80	2.60	2.10	**LMS-6060**
	800	14.00	12.00	10.00	8.00	**LMS-9060**
0-120V	160	1.40	1.40	1.30	1.00	**LMS-6120**
	800	7.00	6.00	5.00	4.00	**LMS-9120**
0-300V	160	0.56	0.56	0.52	0.40	**LMS-6300**
	800	2.80	2.40	2.00	1.60	**LMS-9300**

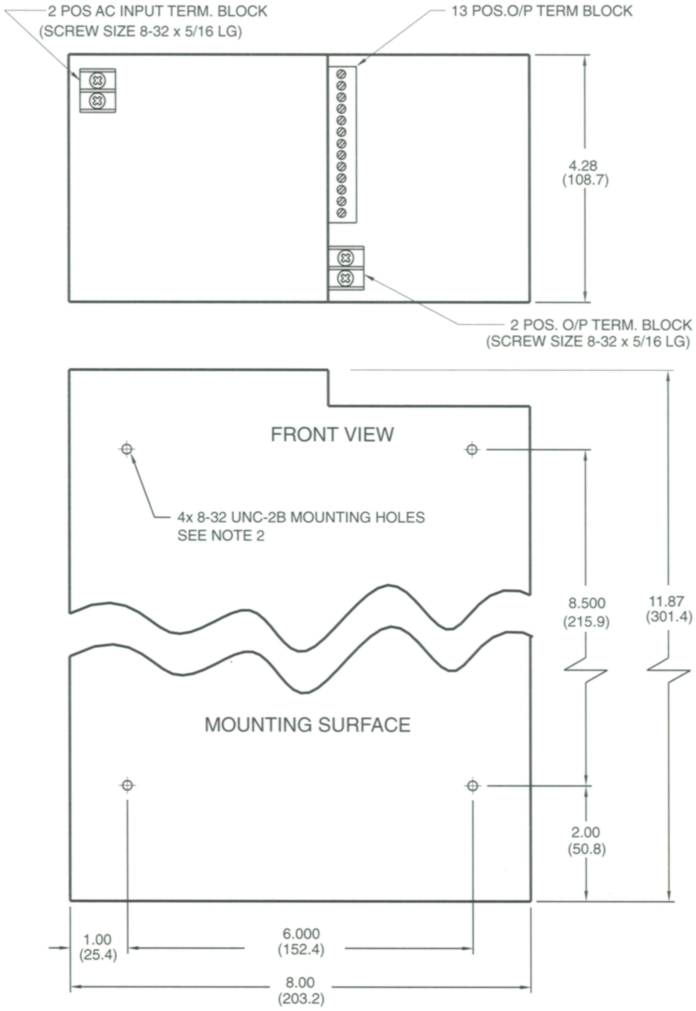
LMS6000



NOTES

1. Dimensions are in inches except dimensions ( ) are in mm.
2. 8-32 UNC-2b tapped holes for customer mtg. Screws must not protrude into power supply by more than .25 (6.3).
3. Customer must provide clearance around vent holes to allow for air flow.
4. Weight: net 7.25 lbs, ship 8.0 lbs.

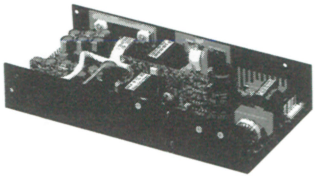
LMS9000



NOTES

1. Dimensions are in inches except dimensions ( ) are in mm.
2. 8-32 UNC-2B tapped holes for customer mtg. Screws must not protrude into power supply by more than .25 (6.3).
3. Customer must provide clearance around vent holes to allow for air flow.
4. Weight: net 14.5 lbs, ship 19.0 lbs.

SV/SVP Series 100W-300W power supplies



Universal AC Input

VDE/FCC Level B EMI

Low Profile

Worldwide Safety Agency Approvals

System Interface Signals

Broad Offering

Output Current Surge Capability

Low Cost and Short Lead Time

Covered or Uncovered

Lambda's SV Series are the only 100W to 300W power supplies that offer either auto-selecting AC input or power factor corrected AC input in the same mechanical package. This allows you to optimize system cost, features and assembly time by integrating the model that best suits your application. Since the PFC and non-PFC models are form and fit compatible, the SV Series is a no-risk solution for systems that may require upgrading to power factor correction in the future.

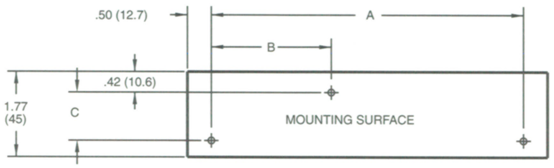
The SV Series is available in 100W, 150W and 250W single output models, and 130W, 170W, 200W, & 300W multiple output models. For applications such as computer peripherals, embedded processes, and communications equipment, the SV Series provides unequaled cost, flexibility and performance.

Similar products		**Page**
RP	Higher Power Multiple Output	54
ZW	PCB Single Output	14
SWT	PCB Triple Output	18
LW	Chassis, Low Power, Low Profile	20

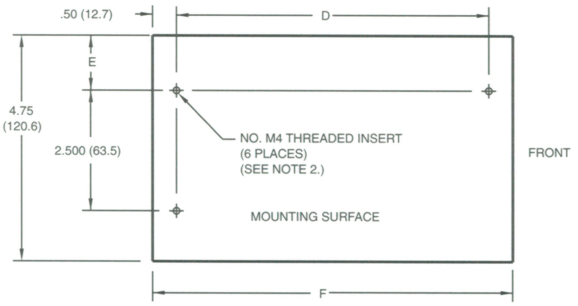
AC Input	SV Models: 85-132VAC, 180-264 VAC (auto-selecting input) 47-63Hz. SVP Models: 90-132VAC, 187-264 VAC (auto-selecting input), 47-63 Hz on 100-150W models. 85-265VAC, 47-63 Hz on 170-300W models.
Fusing	AC line is fused internally.
Power Factor Correction	IEC555-2 and EN60555-2 (SVP models only).
Input Transient Protection	IEEE C62.41-1991 location category A2. ENG1000-4 (-2,-3,-4,-5,-6,). IEC1000-4 (-2,-3,-4,-5,-6,). (A3 with external MOV's). IEC801, -2, -3, -4, -5 Class 3.
Inrush Current Limiting	75A typical for cold startup at 25°C.
Surge Current Capability	Auxiliary outputs are capable of providing a 10 second surge of 3 times the output current rating with a 50% duty cycle. Total power must always remain within package ratings.
EMI	Conducted EMI conforms to FCC Part 15, Subpart J, Class B and VDE 0871, Curve B.
Output Voltage Adj Range	±5% user adjustable on single output models and on main output of multiples. Auxiliary outputs are fixed.
Line Regulation	0.5% from low line to high line.
Load Regulation	1% from no load to full load on main output. 5% for 50% load variations on auxiliaries.
Ripple and Noise	2% pk-pk typical.
Preload	25% preload required on the main output of SVT115 and SVQ130, and on +12V auxiliary output of SVT170, SVT300, SVQ200, SVQ300.
Overcurrent Protection	Limits output current to 140% (typical) of maximum rating on main output.
Overvoltage Protection	OV protection is provided on 5V single output models and main outputs of multiple output models. The unit will reset after input is recycled if OV condition is removed.
Short Circuit Protection	All outputs are protected from temporary short circuits.
Cooling	Ratings are provided for convection cooling.
Operating Temperature Range	0°C to +60°C with derating above +50°C.
Storage Temperature	-30°C to +85°C.
Isolation	Input to output – 3000VRMS. Input to chassis – 1500VRMS. Output to ground – 500VRMS.
Vibration and Shock	Meets MIL-STD-810E specification for transportation.
Monitoring Signals	AC Power Fail and DC Output Good Signals (Open Collector, Conductance Signal) are standard features.
Remote Sensing	Remote sensing capability is provided on the single output models and main outputs only. (0.5V Maximum IR drop across load cables).
Input and Output Connections	Molex connectors, bussbars, terminal strips. Molex connectors only for SVS100, SVT115 and SVQ130 models.
Safety Agency Approval	UL1950, CSA22.2 No 234, VDE/EN60950, and CE mark (low voltage directive).
Option	Add Z for fully enclosed unit.
Warranty	1 year.

POWER(W)	OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4	MODEL
Single Output					
100	+5V@20A	–	–	–	**SVS100-5**
100	+5V@20A	–	–	–	**SVPS10-5**
100	+12V@8.3A	–	–	–	**SVS100-12**
100	+12V@8.3A	–	–	–	**SVPS10-12**
100	+24V@4.3A	–	–	–	**SVS100-24**
100	+24V@4.3A	–	–	–	**SVPS10-24**
150	+5V@30A	–	–	–	**SVS150-5**
150	+5V@30A	–	–	–	**SVPS15-5**
150	+12V@12.5A	–	–	–	**SVS150-12**
150	+12V@12.5A	–	–	–	**SVPS15-12**
150	+24V@6.25A	–	–	–	**SVS150-24**
150	+24V@6.25A	–	–	–	**SVPS15-24**
250	+5V@50A	–	–	–	**SVPS25-5**
250	+12V@20.8A	–	–	–	**SVPS25-12**
250	+15V@16.7A	–	–	–	**SVPS25-15**
250	+24V@10.5A	–	–	–	**SVPS25-24**
250	+48V@5.2A	–	–	–	**SVPS25-48**
Triple Output					
115	+5V@15A	+12V@2.5A	-12V@1A	–	**SVT115-1**
115	+5V@15A	+12V@2.5A	-12V@1A	–	**SVPT115-1**
115	+5V@15A	+15V@2.5A	-15V@1A	–	**SVPT115.2**
115	+5V@15A	+15V@2.5A	-15V@1A	–	**SVT115-2**
170	+5V@22A	+12V@3.8A	-12V@1.5A	–	**SVT170-1**
170	+5V@22A	+12V@3.8A	-12V@1.5A	–	**SVPT170-1**
300	+5V@38A	+12V@6A	-12V@3A	–	**SVT300-1**
300	+5V@38A	+12V@6A	-12V@3A	–	**SVPT300-1**
Quad Output					
130	+5V@15A	+12V@2.5A	-12V@1A	+24V@.8A	**SVPQ130-1**
130	+5V@15A	+12V@2.5A	-12V@1A	-5V@1.5A	**SVPQ130-2**
130	+5V@15A	+15V@2.5A	-15V@1A	+24V@.8A	**SVPQ130-3**
130	+5V@15A	+15V@2.5A	-15V@1A	-5V@1.5A	**SVPQ130-4**
130	+5V@15A	+12V@2.5A	-12V@1A	+24V@.8A	**SVQ130-1**
130	+5V@15A	+12V@2.5A	-12V@1A	-5V@1.5A	**SVQ130-2**
200	+5V@22A	+12V@3.8A	-12V@1.5A	+24V@1.5A	**SVPQ200-1**
200	+5V@22A	+12V@3.8A	-12V@1.5A	-5V@5A	**SVPQ200-2**
200	+5V@22A	+12V@3.8A	-12V@1.5A	+24V@1.5A	**SVQ200-1**
200	+5V@22A	+12V@3.8A	-12V@1.5A	-5V@5A	**SVQ200-2**
200	+5V@22A	+15V@3.8A	-15V@1.5A	+24V@1.2A	**SVPQ200-3**
200	+5V@22A	+15V@3.8A	-15V@1.5A	+24V@1.2A	**SVQ200-3**
300	+5V@38A	+12V@6A	-12V@3A	+24V@2A	**SVPQ300-1**
300	+5V@38A	+12V@6A	-12V@3A	-5V@8A	**SVPQ300-2**
300	+5V@38A	+12V@6A	-12V@3A	+12V@2A	**SVPQ300-5**
300	+5V@38A	+12V@6A	-12V@3A	+24V@2A	**SVQ300-1**
300	+5V@38A	+12V@6A	-12V@3A	-5V@8A	**SVQ300-2**

SVS100/SVPS10
SVT115/SVPT115
SVQ130/SVPQ130
SVS150/SVPS15



SIDE VIEW



BOTTOM VIEW

DIMENSIONS:

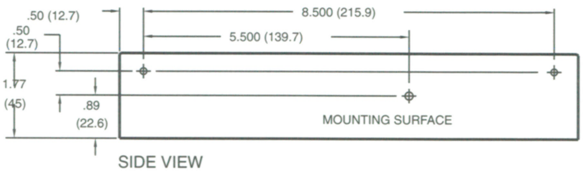
MODEL	A	B	C	D	E	F
SVS100	6.50 (165.1)	2.50 (63.5)	0.50 (12.7)	6.50 (165.1)	1.17 (29.8)	7.50 (190.5)
SVPS10	6.50 (165.1)	2.50 (63.5)	0.50 (12.7)	6.50 (165.1)	1.17 (29.8)	7.50 (190.5)
SVT115	7.50 (190.5)	2.50 (63.5)	1.00 (25.4)	7.50 (190.5)	1.17 (29.8)	8.50 (215.9)
SVPT115	7.50 (190.5)	2.50 (63.5)	1.00 (25.4)	7.50 (190.5)	1.17 (29.8)	8.50 (215.9)
SVQ130	7.50 (190.5)	2.50 (63.5)	1.00 (25.4)	7.50 (190.5)	1.17 (29.8)	8.50 (215.9)
SVPQ130	7.50 (190.5)	2.50 (63.5)	1.00 (25.4)	7.50 (190.5)	1.17 (29.8)	8.50 (215.9)
SVS150	7.50 (190.5)	2.50 (63.5)	1.00 (25.4)	7.50 (190.5)	1.17 (29.8)	8.50 (215.9)
SVPS15	7.50 (190.5)	2.50 (63.5)	1.00 (25.4)	7.50 (190.5)	1.17 (29.8)	8.50 (215.9)

NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MM.
2. CUSTOMER MOUNTING SCREWS (NO. M4) MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THEN 1/4 INCH (6.3)

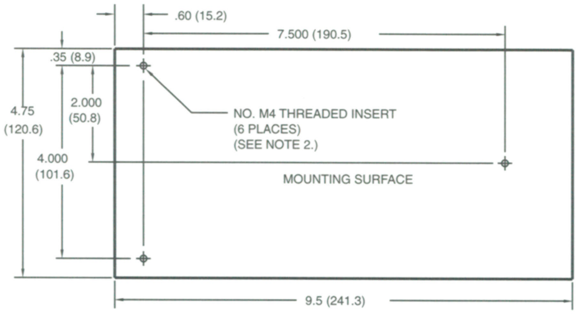
Net Weight (Lbs)

SVS100	1.7
SVPS10	2.1
SVS115	2.1
SVQ130	2.1
SVPQ130	2.8
SVS150	2.2
SVPS150	2.9

SVT170/SVPT170
SVQ200/SVPQ200
SVPS25



SIDE VIEW



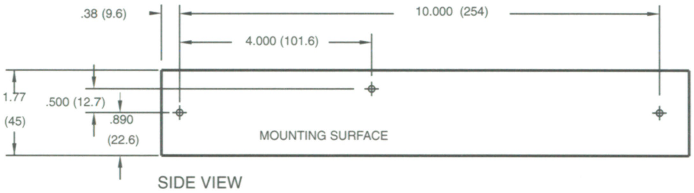
BOTTOM VIEW

NOTE:
1. CUSTOMER MOUNTING SCREWS (NO. M4) MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THEN 1/4 INCH (6.3)
2. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MM.

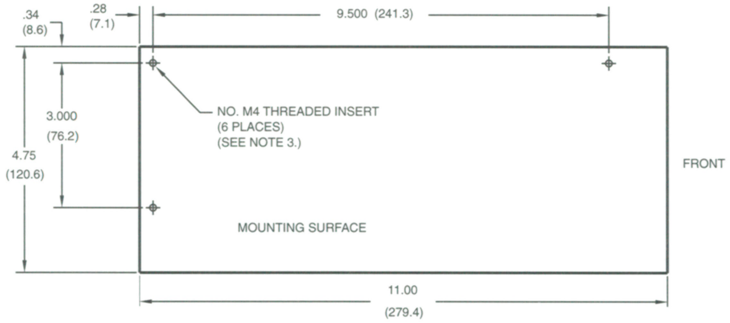
WEIGHT:

NET	LBS
SVT170	2.5
SVPT170	2.9
SVQ200	2.5
SVPQ200	2.9
SVPS25	2.9

SVT300/SVPT300
SVQ300/SVPQ300



SIDE VIEW



BOTTOM VIEW

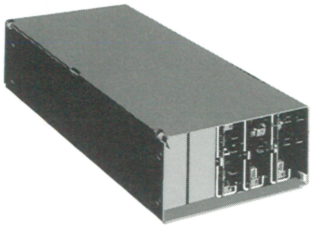
NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MM.
2. CUSTOMER MOUNTING SCREWS (NO. M4) MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THEN 1/4 INCH (6.3)

WEIGHT:

NET	LBS
SV300	3.2
SVP300	3.7

Alpha Series Low cost modular power solution



Power Factor & Harmonic Correction

Input Transient Protection

Wide Range Output Modules

Up to 7 Outputs

No Minimum Load Requirements

Modular Configurable Outputs

Fast-on Tab Connectors For Fast Installation

Worldwide Safety Agency Approvals

When relying on customized power supplies, many companies experience the frustrations of expensive NRE costs, long time to market and design uncertainty. Lambda's Alpha Series addresses these concerns by providing custom power solutions with short lead-times, No NRE, and ordering ease of a standard product.

Lambda's Alpha Series is available in a 400 watt package with 13 wide range output modules available in both single and dual outputs. Ensuring global acceptance, Lambda's Alpha Series features Power Factor Correction, Universal AC Input, and International Agency Approvals.

Similar products		**Page**
UltraFlex	DC Input, Greater Flexibility	92
PP	Lower Cost Fixed Ouputs	74
RP	Higher Power, Smaller Size	54

AC Input	90-255VAC, 47-63Hz.
Efficiency	75% typical, configuration and input voltage dependent.
Power Factor Correction	EN61000-3-2.
Input Transient Protection	IEC1000-4-2 (-3, -4, -5).
EMI	Conducted: EN55022-B Curve B & FCC Class B.
Output Voltage Adj Range	Multi-turn potentiometer.
Line Regulation	<0.5%.
Load Regulation	<0.5%, with remote sense.
Ripple and Noise	50 mV pk-pk for 3.3 & 5V. 150 mV pk-pk for 12-15V. 240 mV pk-pk for 18-28V.
Hold-up Time	15ms (minimum).
Overcurrent Protection	Electronic current limiting circuit limits the output current to 105%-130% of the maximum rated current with automatic recovery.
Overvoltage Protection	Non-crowbar, inverter shutdown type OV protection.
Cooling	Fan cooled.
Operating Temperature Range	0°C to +65°C, with derating of 2.5%/°C above +50°C.
Storage Temperature	-40°C to +85°C.
Humidity	5-95% RH (non-condensing).
Isolation	Input to Output – 3.0kVAC. Input to Chassis (FG) – 1.5kVAC. Output to Chassis (FG) – 500VDC.
Remote Sensing	All modules except dual outputs.
Input and Output Connections	Fast connection tabs.
Safety Agency Approval	UL1950, CSA22.2 No. 234, EN60950 and CE Mark (Low Voltage Directive).
Options	AC Fail, Global Inhibit, Module Inhibit, Module to Module Current Sharing, Parallel for Redundancy and 5V auxiliary.
Warranty	1 year.

Output1 Output2 Output3

CA400 5A 5C 12/15E

Maximum output power

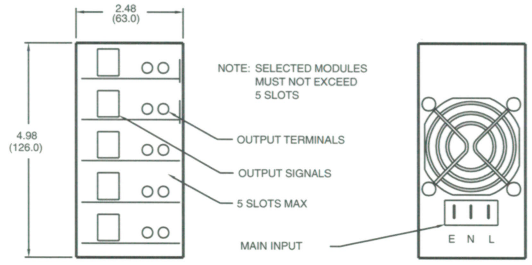
Required voltage

Module

Note: Module total slots must not exceed 5 slots

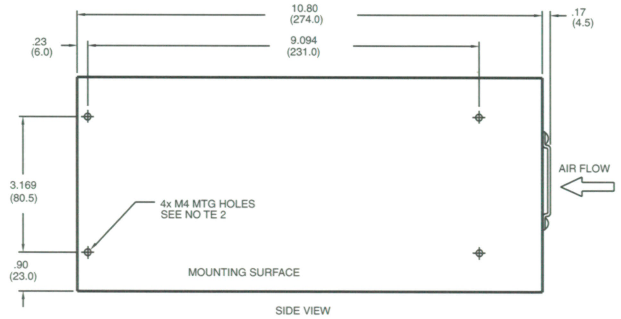
Upon order placement Lambda will verify the part number configuration and supply a customer specific part number. (i.e. CA400 H12345)

		MAX CURRENT AMPS AT				
OUTPUT	**POWER (W)**	**40°**	**50°**	**60°**	**SLOTS**	**MODEL**
Single Output						
3.3V (2.7-3.9)	97.5	25.0	25.0	18.75	1	**Q Module**
	234	60.0	60.0	45.00	2	**R Module**
5V (4.5-5.5)	137.5	25.0	25.0	18.75	1	**B Module**
	330	60.0	55.0	41.25	2	**A Module**
12V (5.0-15.0)	120	8.0	8.0	6.00	1	**M Module**
	240	16.0	16.0	12.00	1	**C Module**
12V (10.0-15.0)	495	33.0	33.0	24.75	2	**F Module**
24V (18.0-28.0)	140	5.0	5.0	3.75	1	**N Module**
	192	8.0	8.0	6.00	1	**D Module**
	600	25.0	23.0	17.25	2	**G Module**
Dual Output						
12/12V (5.0-15.0)	240	8.0	8.0	6.00	1	**E Module**
24/24V (18.0-28.0)	280	5.0	5.0	3.75	1	**H Module**
12V (5.0-15.0)	260	8.0	8.0	6.00	1	**P Module**
24V (18.0-28.0)	260	5.0	5.0	3.75		

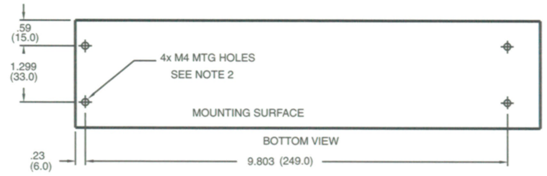


OUTPUT SIDE

INPUT SIDE



SIDE VIEW



BOTTOM VIEW

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM
2. 4x M4 TAPPED HOLES FOR CUSTOMER MTG SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES TO ALLOW FOR AIR FLOW

UltraFlex Series Modular power supplies

Customized Power Supplies Available in 1 Week

Compact Packages

Fully Regulated & Independent Outputs

Universal AC Input or 48VDC Input

Power Factor & Harmonic Correction

System Interface & Monitoring Signals

International Safety Agency Approvals

Meets Worldwide EMI Requirements

Input Transient Protection

Fixed Frequency Converters

Remote Sense

There's no need to panic just because you need a power supply that doesn't seem to be available from stock. In just one week or less, Lambda will ship a prototype 400W or 600W supply with any output voltages and signals you need. The UltraFlex Series provides high performance and high power density, with either a power factor corrected AC input or a 48VDC input.

With leading edge and proprietary circuit design 280 KHz fixed frequency converters, synchronized circuits, planar magnetics, advanced thermal management and surface mount technology, these power supplies offer state-of-the-art power densities, exceptional flexibility, reliability, and outstanding performance.

Lambda's UltraFlex Series gives you the flexibility you need to cope with today's fastpaced new product development cycles and relentless time-to-market schedules.

Similar products		Page
UltraFlex	DC Input	92
RP	Lower Cost, Fixed Outputs	54
Alpha	Low Cost Modular	48

AC Input	85-265VAC, 47-63 Hz.(Case A & B).
DC Input	36-75VDC on Case C.
Efficiency	75% typical at nominal line voltage.
Power Factor Correction	All models are compliant with EN60555-2 and EN61000-3-2, with up to 250VAC input. Power factor is 0.998 typical at full load.
Inrush Current Limiting	Less than 40 Amps peak.
EMI	Conducted EMI conforms to EN55022, Level B, and FCC Docket 20780 Part 15, Subpart J, Class B.
Output Voltage Adj Range	±10% of nominal output voltage on all.
Line Regulation	Less than 0.1% for line variations from 85-265VAC. Less than 0.2% for dual output modules.
Load Regulation	Less than 0.4% for load variations from no load to full load and full load to no load. Less than 0.8% for dual output modules.
Cross Regulation	Less than 0.1% between single output modules. Less than 3% between dual outputs with 25% load change on high current output.
Ripple and Noise	For outputs 12V or less, 50mV pk to pk or 15mV RMS. For outputs greater than 12V, 1% pk to pk or .33% V RMS. For dual outputs, 1% pk to pk or .33% V RMS 20mHz bandwidth.
Preload	External preload is not required on single output modules. Dual output modules require 1A minimum load on the highest current output (Output #1).
Hold-up Time	The output voltage will remain within regulation limits for 20msec at full load with nominal 115/230VAC line input.
Overvoltage Protection	Internal circuitry will shut down the individual output module. Reset the OVP by recycling the input power.
Overload Protection	Overcurrent protection on single output modules limits the current. Upon removal of the overload condition, normal operation resumes automatically.
Cooling	Cooling is provided via an internal DC operated ball-bearing fan.
Operating Temperature Range	Full operation from 0°C to +50°C with 100% rated power on most models. Derate linearly from +50°C to 50% power at +65°C.
Storage Temperature	-40°C to +85°C.
Temperature Coefficient	0.02%/ °C.
Isolation	Conforms to safety agency requirements.
Remote Sensing	Remote sense compensates for total cable drop of up to 0.5VDC. Available on all outputs.
Thermal Protection	The power supply will shut down in the event of an overtemperature condition (the fan will continue to operate). To restore operation, the supply must cool down and the AC input must be recycled.
Mounting	Two mounting surfaces on all models.
Military Specifications	SHOCK – MIL-STD-810E, Method 516.4,Procedure 1. VIBRATION – MIL-STD-810E, Method 514.4,Category I, TP1.
Safety Agency	UL 1950, CSA 22.2 No.220 and/or 234 Bulletin 1902A, EN 60950, CE Low Voltage Directive.
Warranty	3 years.

U A K 1 - H J J P

Output Module Codes
Input Voltage & EMI Code
Interface Signal Option Code
Case Configuration & Output Power Code

Case Configuration & Output Codes

OUTPUT POWER (WATTS)	CASE SIZE (INCHES)	WEIGHT LBS.	CASE CODE	INPUT VOLTAGE
400W	2.5 x 5 x 10	5.5	A	85-265 VAC
600W	2.5 x 5 x 11	6.0	B	85-265 VAC
600W	2.5 x 5 x 12	6.5	C	36-75 VDC
1500W	5 x 5 x 12	TBA	E	85-265 VAC

(cases hold up to 5 module slots)

Interface Signal Option Code

J = NO OPTIONAL SIGNALS: The standard DC Output Module has Remote Sense, Overcurrent and Overvoltage Protection.

K = INPUT SIGNALS (Global): Input Power Fail, 5V Standby, Global Inhibit, Fan Stop/Thermal Alarm, Fan Inhibit.

T = OUTPUT MODULE SIGNALS: Module Inhibit, Margin, Remote Adjust, Output Good, Current Monitor & Current Share: Active Current Share & Module Inverter OK.

Z = INPUT SIGNALS (Global): Input Power Fail, 5V Standby, Global Inhibit, Global Output Good, Fan Stop/Thermal Alarm, Fan Inhibit & OUTPUT MODULE SIGNALS: Module Inhibit, Margin, Remote Adjust, Output Good, Current Monitor & Current Share: Active Current Share & Module Inverter OK.

Notes:

1. Output Module Signals and Current Share options only available on single output modules.
2. Global Output Good Signal is provided with Input Signals option when individual modules.
3. Signals are valid with outputs loaded.

Input Voltage & EMI Codes

1 = PFC, 85-265 VAC, 50/60 Hz, Class B EMI

4 = DC INPUT, 36-75 VDC, Class B EMI

Output Module Codes

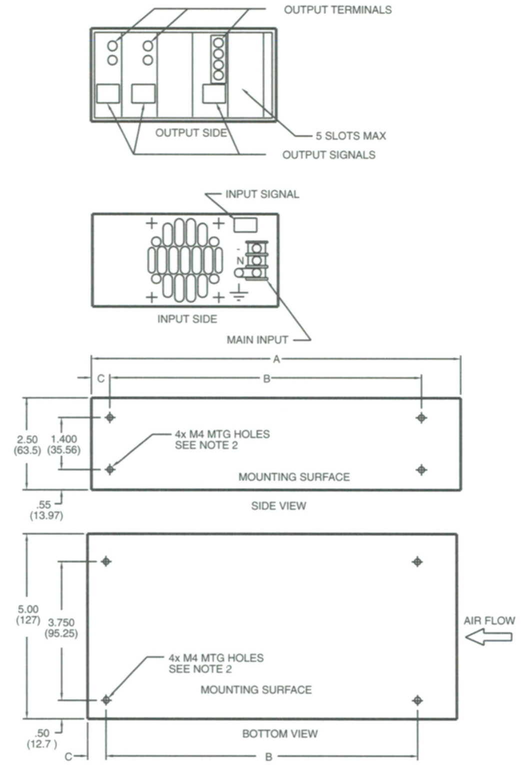
400 & 600 watt cases (A, B, or C Cases) can hold up to five module slot widths.

OUTPUT VOLTAGE	MAX CURRENT AMPS @ 50°C	MAX POWER WATTS @ 50°C	VOUT ADJUST RANGE	SLOT WIDTH	MODULE CODE
Single Output Modules					
2V	30.0	66	1.8–2.2	1	A
2V	60.0	132	1.8–2.2	2	B
2V	100.0	200	1.8–2.2	3	C
3.3V	30.0	108	3.0–3.6	1	D
3.3V	60.0	216	3.0–3.6	2	E
3.3V	100.0	330	3.0–3.6	3	F
5V	30.0	150	4.5–6.0	1	G
5V[3]	60.0	300	4.5–6.0	2	H
5V	100.0	500	4.5–6.0	3	I
12V	17.0	204	10.8–13.2	1	J
12V	30.0	360	10.8–13.2	2	K
12V	50.0	600	10.8–13.2	3	L
15V	14.0	210	13.5–16.5	1	M
15V	24.0	360	13.5–16.5	2	N
24V	8.5	204	21.6–26.4	1	P
24V	15.0	360	21.6–26.4	2	Q
24V	24.0	576	21.6–28.0	3	R
28V	12.0	336	25.2–30.8	2	8
36V	11.0	396	32.4–39.6	2	3
48V	4.0	192	43.2–52.8	1	S
48V	8.0	384	43.2–52.8	2	T
48V	12.0	576	43.2–52.8	3	U
Dual Output Modules					
12V & 5V[3]	10.0 & 4.0	150	±10%	1	V
5V & 12V[3]	10.0 & 4.0	150	±10%	1	W
12V & 12V[3]	10.0 & 4.0	150	±10%	1	Y
15V & 15V	8.0 & 3.0[1]	150	±10%	1	Z

NOTES:

1. Peak Rating 10A and 4A for up to 1 minute.
2. Other output voltages are available. Contact the factory with your specific needs.
3. When using the 600W AC Case B, derate as follows:
   H Module: 5V@55A
   W Module: 5V@8A, 12V@4A
   V Module: 12V@8A, 5V@3A
   Y Module: 12V@8A, 12V@3A
   These modules have no derating up to 40°C for the 600W case.
4. On dual output modules, output 1 has the highest current rating.

UA



DIMENSIONS:

MODEL	A	B	C
UA	9.96 (252.98)	8.400 (213.36)	.50 (12.7)
UB	10.96 (278.38)	9.630 (244.6)	.50 (12.7)

APPROX. WEIGHT:

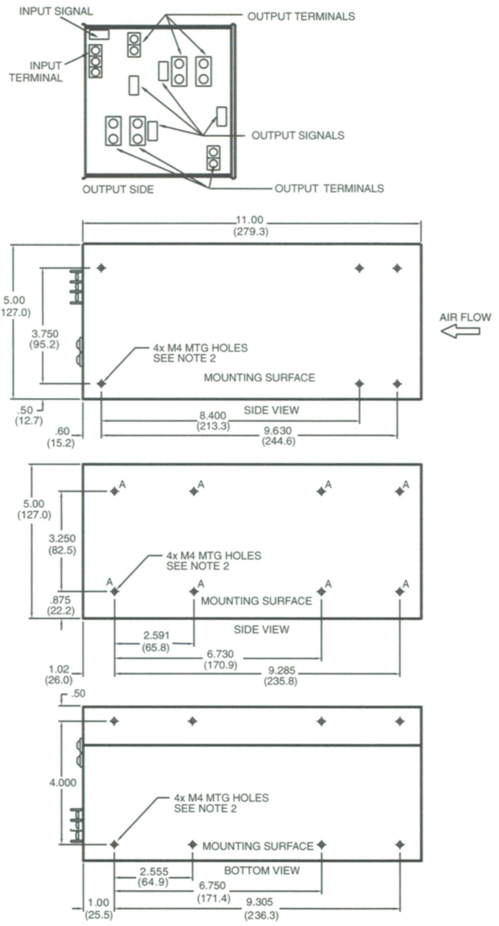
MODEL	NET LBS	SHIP LBS
UA	5.5	7.5
UB	6.0	8.0

(WEIGHT DEPENDENT ON MODULE CONFIG.)

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 8x M4 TAPPED HOLES FOR CUSTOMER MTG. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES TO ALLOW FOR AIR FLOW.

UE



APPROX. WEIGHT:

MODEL	NET LBS	SHIP LBS
UE	6.5	8.5

(WEIGHT DEPENDENT ON MODULE CONFIG.)

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 8x M4 TAPPED HOLES FOR CUSTOMER MTG. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES TO ALLOW FOR AIR FLOW.

RP Series

CE/EMC-compliant power supplies

CE-EMC Compliance

Computer, Telecom and Industrial specific output voltage offering

Higher powered outputs

Lower Profile

85-265 VAC Wide Range Input

Worldwide Agency Approvals

Power Factor Correction

Multiple Product Options

System Interface Signals

High Power 3 and 5V Capability

The RP series represents the first line of standard power supplies which complies with the EMC directive for CE marking and offers high current, 3.3V and 5V outputs as well as common auxiliary voltages such as ±12V, 24V, and 48V. With up to five outputs in one package, the RP can accommodate all peripheral power requirements and can provide a smooth migration from 5V to 3.3V logic.

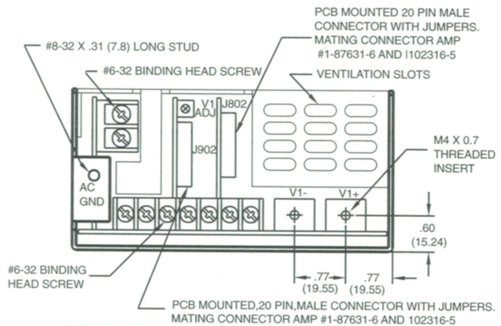
By facilitating total system power solutions in a single unit, the RP series minimizes requirements for manufacturers of computers and computer - controlled equipment to utilize multiple and/or custom power supplies, or to modify the design of the computer system to allow the use of an existing, suboptimal power solution. As a result, the RP Series will conserve space, save time and reduce design and manufacturing costs. The RP Series: Ideal for any microprocessor-based system.

Similar products		Page
PFD	DC Input	94
UltraFlex	Non Standard Outputs	50
SV	Lower Power	44

AC Input	85 to 265VAC, 47 to 63Hz Full power from 95 to 265VAC, derate linearly to 85% power at 85 VAC.
DC Input	125 VDC, ±10%.
Efficiency	70% typical.
Input Surge Protection	EN61000-4-5, IEC1000-5, IEC801-5, IEEE C62.41 (Category A2)– category A3 optional.
Input Transient Protection	EN61000-4-4, IEC1000-4-4, IEC801-4.
Inrush Current Limiting	50A at 25°C cold start @ 220VAC.
EMI	Conducted: EN55022 Curve B, FCC Part 15, Subpart B,Class B, CISPR 22 (class B). Radiated: EN55022 Curve A, CISPR 22 Group 1 (class A).
Output Voltage Adj Range	Output #1: RP0530: 3.0V to 4.5V. RP0550: 4.5V to 5.75V. RP0750 & RP1000: 3.0V to 5.75V. Outputs # 2,3,4,& 5: Fixed in all models ±3% initial accuracy.
Total Regulation	RP05XX, RP0750 & RP1000: 1% on output #1; 2% on outputs # 2, 3, 4 & 5 or 100uV whichever is greater. RP05XX needs 10% preload on output #1 to hold regulation on auxiliary outputs.
Dynamic Load Response	10% V(out) deviation on all outputs for step load changes of 25%; Outputs will recover within 2% of V(nom) within 1.0 ms of load step.
Ripple and Noise	100mV or 1.0% of Vout max. pk-pk.
Turn-on Time	1.5 Second maximum.
Hold-up Time	20ms on main output from 120VAC, 60 Hz.
Overvoltage Protection	OVP on all outputs. Input power must be recycled to resume normal operation after shutdown.
Overload Protection	All outputs protected by electronic current limit. Output # will shutdown after 1 second delay.
ESD Immunity	EN61000-4-2, IEC1000-4-2, IEC801-2 (level 3).
Operating Temperature Range	0°C to 70°C. Full power to 50°C. Derate linearly to 50% power at 70°C.
Storage Temperature	-40°C to +85°C.
Temperature Coefficient	0.05%/ °C.
Isolation	Input - Output: 4250 VDC. Input - Chassis: 2125 VDC. Output - Chassis: 150 VDC.
Output Good Signal	Conductance signal on main output; Secondary referenced, Open collector signal.
Input Good Signal	Conductance good signal; secondary referenced, open collector signal.
Fan Fail Detect	Unit senses fan failure or locked rotor and activates output shutdown providing secondary referenced open conductance signal. (Standard).
Remote On/Off	Active high(open circuit) to enable; Contact closure on -S of output #1 to shutdown.
Safety Agency Approval	UL1950, CSA234 M90, EN60950, CE Mark.
Options	–N: Provides VME compliant signal, AC good, reset, system reset. –R: Provides 10 seconds delay auto-restart after over current condition (instead of the standard 1 second). –S: Custom sequencinys of output turn-on. -T: Provides 10% current share on main outputs and dosap on auxiliaries. Overtemperature signal.
Warranty	1 year warranty, parts and labor.

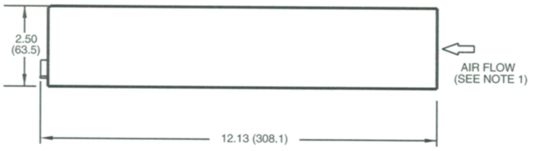
POWER(W)	OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4	OUTPUT 5	MODEL
Triple Output						
500	+3.3V	+12V@12A	-12V@4A	–	–	**RP0530-3AHZ**
500	+5V	+12V@12A	-12V@4A	–	–	**RP0550-3AHZ**
750	+5V	+12V@18A	-12V@7A	–	–	**RP0750-3AHZ**
1000	+5V@150A	+12V@24A	-12V@10A	–	–	**RP1000-3AHZ**
Quad Output						
500	+3.3V@75A	+12V@12A	-12V@4A	+3.3V@20A	–	**RP0530-4AH-Z**
500	+5V@75A	+12V@12A	-12V@4A	+3.3V@20A	–	**RP0550-4AH-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+5.2V@10A	–	**RP0530-4BH-Z**
500	+5V@75A	+12V@12A	-12V@4A	+5.2V@10A	–	**RP0550-4BH-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+12V@10A	–	**RP0530-4CH-Z**
500	+5V@75A	+12V@12A	-12V@4A	+12V@10A	–	**RP0550-4CH-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+24V@7A	–	**RP0530-4DH-Z**
500	+5V@75A	+12V@12A	-12V@4A	+24V@7A	–	**RP0550-4DH-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+48V@3A	–	**RP0530-4EH-Z**
500	+5V@75A	+12V@12A	-12V@4A	+48V@3A	–	**RP0550-4EH-Z**
750	+5V@110A	+12V@18A	-12V@7A	+3.3V@30A	–	**RP0750-4AH-Z**
750	+5V@110A	+12V@18A	-12V@7A	+5.2V@15A	–	**RP0750-4BH-Z**
750	+5V@110A	+12V@18A	-12V@7A	+12V@13A	–	**RP0750-4CH-Z**
750	+5V@110A	+12V@18A	-12V@7A	+24V@8A	–	**RP0750-4DH-Z**
750	+5V@110A	+12V@18A	-12V@7A	+48V@4A	–	**RP0750-4EH-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+3.3V@40A	–	**RP1000-4AH-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+5.2V@20A	–	**RP1000-4BH-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+12V@16A	–	**RP1000-4CH-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+24V@8A	–	**RP1000-4DH-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+48V@4A	–	**RP1000-4EH-Z**
Pent Output						
500	+3.3V@75A	+12V@12A	-12V@4A	+3.3V@20A	+5.2V@5A	**RP0530-5AJ-Z**
500	+5V@75A	+12V@12A	-12V@4A	+3.3V@20A	+5.2V@5A	**RP0550-5AJ-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+3.3V@20A	+12V@2.5A	**RP0530-5AK-Z**
500	+5V@75A	+12V@12A	-12V@4A	+3.3V@20A	+12V@2.5A	**RP0550-5AK-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+5.2V@10A	+5.2V@5A	**RP0530-5BJ-Z**
500	+5V@75A	+12V@12A	-12V@4A	+5.2V@10A	+5.2V@5A	**RP0550-5BJ-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+5.2V@10A	+12V@2.5A	**RP0530-5BK-Z**
500	+5V@75A	+12V@12A	-12V@4A	+5.2V@10A	+12V@2.5A	**RP0550-5BK-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+12V@10A	+5.2V@5A	**RP0530-5CJ-Z**
500	+5V@75A	+12V@12A	-12V@4A	+12V@10A	+5.2V@5A	**RP0550-5CJ-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+12V@10A	+12V@2.5A	**RP0530-5CK-Z**
500	+5V@75A	+12V@12A	-12V@4A	+12V@10A	+12V@2.5A	**RP0550-5CK-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+24V@7A	+5.2V@5A	**RP0530-5DJ-Z**
500	+5V@75A	+12V@12A	-12V@4A	+24V@7A	+5.2V@5A	**RP0550-5DJ-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+24V@7A	+12V@2.5A	**RP0530-5DK-Z**
500	+5V@75A	+12V@12A	-12V@4A	+24V@7A	+12V@2.5A	**RP0550-5DK-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+48V@3A	+5.2V@5A	**RP0530-5EJ-Z**
500	+5V@75A	+12V@12A	-12V@4A	+48V@3A	+5.2V@5A	**RP0550-5EJ-Z**
500	+3.3V@75A	+12V@12A	-12V@4A	+48V@3A	+12V@2.5A	**RP0550-5EK-Z**
500	+3V@75A	+12V@12A	-12V@4A	+48V@3A	+12V@2.5A	**RP0530-5EK-Z**
750	+5V@110A	+12V@18A	-12V@7A	+3.3V@30A	+5.2V@6.5A	**RP0750-5AJ-Z**
750	+5V@110A	+12V@18A	-12V@7A	+3.3V@30A	+12V@3A	**RP0750-5AK-Z**
750	+5V@110A	+12V@18A	-12V@7A	+5.2V@15A	+5.2V@6.5A	**RP0750-5BJ-Z**
750	+5V@110A	+12V@18A	-12V@7A	+5.2V@15A	+12V@3A	**RP0750-5BK-Z**
750	+5V@110A	+12V@18A	-12V@7A	+12V@13A	+5.2V@6.5A	**RP0750-5CJ-Z**
750	+5V@110A	+12V@18A	-12V@7A	+12V@13A	+12V@3A	**RP0750-5CK-Z**
750	+5V@110A	+12V@18A	-12V@7A	+24V@8A	+5.2V@6.5A	**RP0750-5DJ-Z**
750	+5V@110A	+12V@18A	-12V@7A	+24V@8A	+12V@3A	**RP0750-5DK-Z**
750	+5V@110A	+12V@18A	-12V@7A	+48V@4A	+5.2V@6.5A	**RP0750-5EJ-Z**
750	+5V@110A	+12V@18A	-12V@7A	+48V@4A	+12V@3A	**RP0750-5EK-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+3.3V@40A	+5.2V@8A	**RP1000-5AJ-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+3.3V@40A	+12V@3.5A	**RP1000-5AK-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+5.2V@20A	+5.2V@8A	**RP1000-5BJ-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+5.2V@20A	+12V@3.5A	**RP1000-5BK-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+12V@16A	+5.2V@8A	**RP1000-5CJ-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+12V@16A	+12V@3.5A	**RP1000-5CK-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+24V@8A	+5.2V@8A	**RP1000-5DJ-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+24V@8A	+12V@3.5A	**RP1000-5DK-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+48V@4A	+5.2V@8A	**RP1000-5EJ-Z**
1000	+5V@150A	+12V@24A	-12V@10A	+48V@4A	+12V@3.5A	**RP1000-5EK-Z**

RP-500

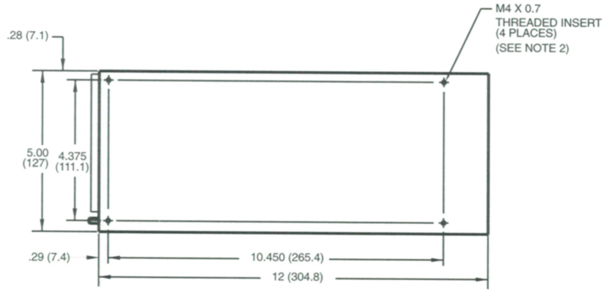


#8-32 X .31 (7.8) LONG STUD
#6-32 BINDING HEAD SCREW
PCB MOUNTED 20 PIN MALE CONNECTOR WITH JUMPERS. MATING CONNECTOR AMP #1-87631-6 AND I102316-5
VENTILATION SLOTS
V1 ADJ
J802
J902
M4 X 0.7 THREADED INSERT
AC GND
V1-
V1+
.60 (15.24)
#6-32 BINDING HEAD SCREW
.77 (19.55)
.77 (19.55)
PCB MOUNTED,20 PIN,MALE CONNECTOR WITH JUMPERS. MATING CONNECTOR AMP #1-87631-6 AND 102316-5

REAR VIEW



SIDE VIEW

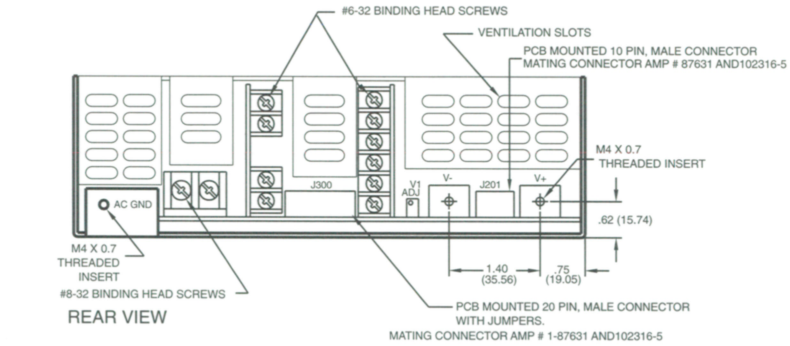


BOTTOM VIEW

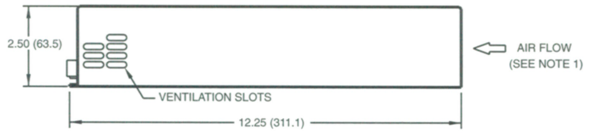
NOTE:

1. CUSTOMER MUST PROVIDE ADEQUATE CLEARANCE AT FRONT AND SIDES FOR AIR FLOW.
2. CUSTOMER MOUNTING SCREWS (NO. M4 X 0.7) MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3)
3. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MM.
4. WEIGHT: NET 5.7 LBS, SHIPPING 6.2 LBS.

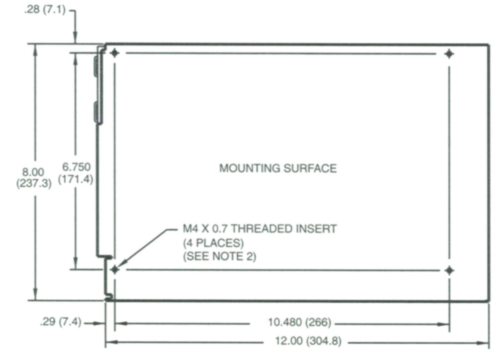
RP-750/1000


#6-32 BINDING HEAD SCREWS
VENTILATION SLOTS
PCB MOUNTED 10 PIN, MALE CONNECTOR
MATING CONNECTOR AMP # 87631 AND102316-5
M4 X 0.7
THREADED INSERT
AC GND
J300
V1
ADJ
V-
J201
V+
.62 (15.74)
1.40
(35.56)
.75
(19.05)
M4 X 0.7
THREADED
INSERT
#8-32 BINDING HEAD SCREWS
PCB MOUNTED 20 PIN, MALE CONNECTOR
WITH JUMPERS.
MATING CONNECTOR AMP # 1-87631 AND102316-5

REAR VIEW



SIDE VIEW



BOTTOM VIEW

NOTE:

1. CUSTOMER MUST PROVIDE ADEQUATE CLEARANCE AT FRONT, SIDES AND TOP SURFACES FOR AIR FLOW.
2. CUSTOMER MOUNTING SCREWS (NO. M4 X 0.7) MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3)
3. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MM.
4. WEIGHT: NET 8.5 LBS, SHIPPING 10 LBS.

LZS/SE Series Power supplies for rugged environments

Harsh Environment

Meets Worldwide EMI Requirements

Input transient Protection

Meets Worldwide Safety Requirements

MIL-STD-810E Vibration/Shock

Auxiliary Monitoring Signals

Wide Range Output Voltage

5 Year Warranty

Single Wire Current Share

SE- Ruggized 115VAC Input (Severe Line Transients)

Lambda's LZS and SE Series single output power supplies (250W to 1500W) are ideal for industrial applications requiring reliable performance under harsh operating conditions.

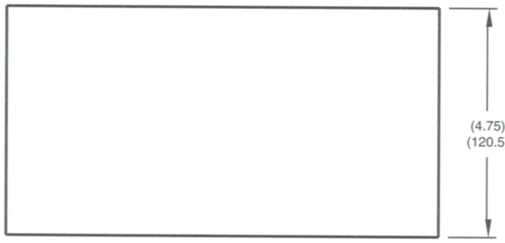
Through temperature extremes, high levels of vibration, shock, and random transients on the AC input, rugged construction and advanced design of the LZS and SE Series guarantee reliable performance. And their meticulous thermal design ensures that all internal components are operating significantly below the manufacturer's rating - even when the ambient operating temperature reaches 71°C. In addition, to ensure reliability in even the most rugged environments, the LZS and SE Series meet the rigorous requirements of MIL-STD-810E Shock and Vibration. Lambda designs these performance features in at the front end - without additional costs.

Similar products		**Page**
LRS	Convection Cooled	62
JFS	PFC	28
JWS	Low Power	24
NES/DRP/JFS	Din Rail Mount	32, 28

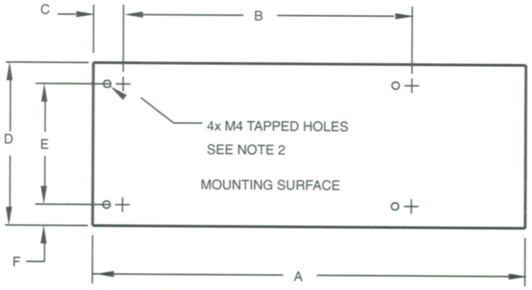
AC Input	85-132/170-265VAC auto selectable, 7-440Hz on the LZS-250, 500, 750, 1000 & 1500. 105-140VAC on the SE Series.
DC Input	220-380VDC.
EMI	Conducted EMI conforms to FCC Part 15, Subpart J, Class B; VDE 0871 Curve B; and MIL-STD-461D, CE102.
DC Output Controls	A multi-turn potentiometer is provided for voltage adjustments.
Line Regulation	0.1% for variations from low line to high line and high line to low line.
Load Regulation	0.1% for load variations from no load to full load and full load to no load.
Ripple and Noise	10mVRMS, 35mV pk-pk for -1 model. 10mVRMS, 50mV pk-pk for -2 model. 10mVRMS, 100mV pk-pk for -3 models.
Parallel Operation	3% max. current balance. Current sharing is achieved through a single wire connection.
Overshoot	No overshoot at turn-on, turn-off or input power failure.
Overvoltage Protection	Inverter shutdown type OV protection is standard on all models.
Overload Protection	Internal current limiting circuit resets automatically.
Cooling	Forced-air cooled via an internal fan.
Operating Temperature Range	Operation from -40°C to +71°C. A 20 min. warm-up for operation below -30°C.
Storage Temperature	-40°C to +85°C.
Temperature Coefficient	0.025% per°C.
Isolation	Input to Output – 3000V RMS. Output to Chassis – 500V RMS. Input to Chassis – 1500V RMS.
Remote On/Off	TTL compatible, active high.
Remote Sensing	Internal circuitry allows for a 1.2V drop in output leads.
Resistive Programming	1000 ohms/volt.
Voltage Programming	Volt per Volt.
Thermal Protection	Internal thermostat protects the power supply against fan failure or blockage. AC power must be recycled to restore operation.
Mounting	One mounting surface and multiple mounting positions.
Military Specifications	Shock – MIL-STD-810E, Method 516.4 Proc. I, II, IV, VI Vibration – MIL-STD-810E, Method 514.4 Category 1, 9.
Safety Agency Approval	UL1950, CSA950, EN60950, CE Mark.
Warranty	5 years.

		MAX CURRENT AMPS AT				
OUTPUT	**POWER (W)**	**40°**	**50°**	**60°**	**71°**	**MODEL**
5,6V (4.5-6.3)	250	50.0	45.0	40.0	30.0	**LZS-250-1**
	500	100.0	90.0	80.0	65.0	**LZS-500-1**
	750	150.0	135.0	120.0	90.0	**LZS-750-1**
	1000	200.0	190.0	160.0	120.0	**LZS-1000-1**
	1500	300.0	270.0	240.0	180.0	**LZS-1500-1**
12,15V (10-15.75)	250	21.0	18.9	16.8	12.6	**LZS-250-2**
	500	42.0	37.5	33.5	27.0	**LZS-500-2**
	750	63.0	56.5	50.0	37.5	**LZS-750-2**
	1000	83.0	80.0	67.0	50.0	**LZS-1000-2**
	1500	125.0	112.5	100.0	75.0	**LZS-1500-2**
24,28V (18-29.4)	250	12.5	11.3	10.0	7.5	**LZS-250-3**
	250	12.5	11.3	10.0	7.5	**SE-250-3**
	500	25.0	22.5	20.0	16.5	**LZS-500-3**
	500	25.0	22.5	20.0	16.5	**SE-500-3**
	750	37.5	33.5	30.0	22.5	**LZS-750-3**
	750	37.5	33.5	30.0	22.5	**SE-750-3**
	1000	50.0	48.0	40.0	30.0	**LZS-1000-3**
	1000	50.0	48.0	40.0	30.0	**SE-1000-3**
	1500	75.0	67.5	60.0	45.0	**LZS-1500-3**
	1500	75.0	67.5	60.0	45.0	**SE-1500-3**

LZS250, 500, 750, 1000, 1500
SE250, 500, 750, 1000, 1500



SIDE VIEW



BOTTOM VIEW

DIMENSIONS:

MODEL	A	B	C	D	E	F
LZS,SE250	9.00 (228.6)	6.000 (152.4)	.62 (15.8)	3.37 (85.7)	2.500 (63.5)	.43 (11.0)
LZS,SE500	10.25 (260.3)	6.500 (165.1)	.62 (15.8)	4.25 (107.9)	3.000 (76.2)	.75 (15.8)
LZS,SE750	10.37 (263.5)	7.500 (109.5)	.62 (15.8)	5.00 (127.0)	3.500 (88.9)	.75 (15.8)
LZS,SE1000	10.50 (266.7)	6.500 (215.9)	.75 (19.0)	5.62 (142.8)	3.500 (88.9)	1.06 (26.9)
LZS,SE1500	11.00 (279.4)	8.000 (203.2)	.75 (19.0)	8.00 (203.2)	3.500 (88.9)	2.12 (54.0)

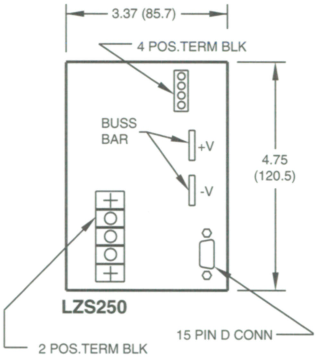
WEIGHT:

MODEL	NET LBS	SHIP LBS
LZS,SE250	7.0	9.0
LZS,SE500	10.0	12.0
LZS,SE750	11.0	14.0
LZS,SE1000	15.5	19.5
LZS,SE1500	19.0	23.0

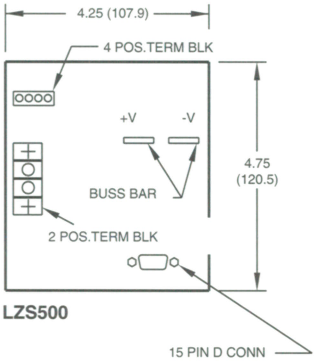
NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 4x M4 TAPPED HOLES FOR CUSTOMER MTG.
SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES
TO ALLOW FOR AIR FLOW.

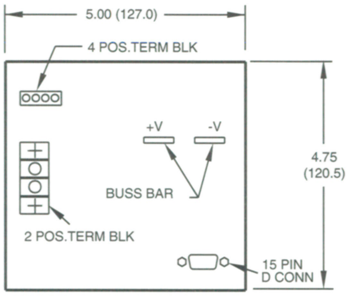
REAR VIEW LZS/SE



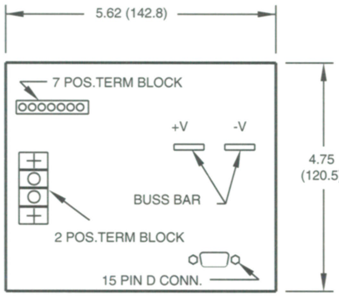
LZS250



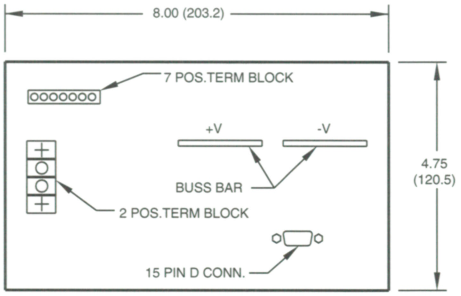
LZS500



LZS750



LZS1000



LZS1500

LRS Series

Rugged convection cooled power supplies

Convection Cooled

Low Output Ripple and Noise

Rugged Construction

5 Year Warranty

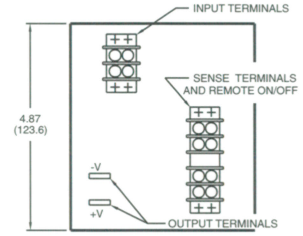
Meets MIL-STD-810C Environment Tests

Lambda's LRS single output power supplies are ideal for rugged environments found in industrial applications. Environmental conditions, such as shock, vibration, humidity, low and high temperatures can seriously affect the performance of a power supply, thereby jeopardizing the integrity and dependability of electronic equipment. Lambda's LRS Series was specifically designed to operate within these parameters ensuring the highest reliability. Up to 1450 watts without the use of fans and available output voltages from 5 to 28 volts, the LRS Series will be the preferred choice for a high quality, maximum up-time supply.

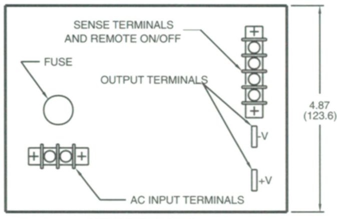
Similar products		**Page**
LZS Series	Fan Cooled	58
JFS	PFC & Lower Cost	28
JWS	Low Voltage, Low Power	24

AC Input	95-132VAC, 47-440Hz, for the LRS-56 Series. 187-265VAC, 47-440Hz, for the LRS-59 Series.
DC Input	145VDC ±10% for the LRS-56. 260 to 370 VDC for the LRS-59.
Fusing	Line fuse removes the power supply from the line if a short occurs in the input circuitry.
Inrush Current Limiting	The turn-on in-rush current will not exceed 40 amps peak from a cold start for the LRS-56. (50amps on the LRS-59).
DC Output Controls	Simple screwdriver adjustment over the entire voltage range.
Remote Programming Voltage	Volt per volt.
Remote Resistive Programming	1000 ohms/V.
Line Regulation	0.1% from low line to high line.
Load Regulation	0.1% from no load to full load.
Ripple and Noise	10mV RMS, 35mV pk-pk for 5V models. 15mV RMS, 100mV pk-pk for 12V through 28V models (20mHz bandwidth).
Overshoot	No overshoot at turn-on, turn-off or power failure.
Overvoltage Protection	Standard on all models. AC must be recycled to reset the OV circuit.
Overload Protection	Automatic electronic self-resetting current limiting circuit.
Cooling	All units are convection cooled. No fans or blowers are needed.
Operating Temperature Range	Continuous duty -10°C to +71°C with suitable derating above 40°C. Guaranteed turn-on at -20°C.
Storage Temperature	-55°C to +85°C.
Fungus Proofing	All units are inherently fungi inert.
Temperature Coefficient	0.03%/°C.
Remote On/Off	Provision is made for digitally controlled remote turn-on, turn-off (TTL Compatible)
Remote Sensing	Provision is made for remote sensing to eliminate the effects of power output lead resistance on DC regulation.
Thermal Protection	Self-resetting thermostat.
Finish	Grey, Fed standard 595, N0. 26081.
Safety Agency Approval	UL1950, CSA950
Warranty	5 years.

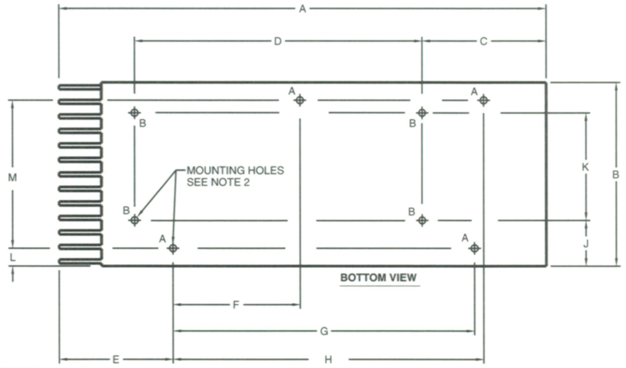
OUTPUT	POWER (W)	MAX CURRENT AMPS AT 40°	50°	60°	71°	MODEL
5V (4.75-5.25)	450	90.00	77.00	61.00	45.00	**LRS-56-5**
	1250	250.00	200.00	165.00	125.00	**LRS-59-5**
12V (11.4-12.6)	564	47.00	41.00	34.00	21.90	**LRS-56-12**
	1320	110.00	92.00	74.00	53.00	**LRS-59-12**
15V (14.25-15.75)	570	38.00	33.00	28.00	17.90	**LRS-56-15**
	1350	90.00	75.00	60.00	43.00	**LRS-59-15**
24V (22.8-25.2)	600	25.00	22.50	18.50	11.60	**LRS-56-24**
	1440	60.00	50.00	40.00	28.00	**LRS-59-24**
28V (26.6-29.4)	616	22.00	20.00	16.00	10.00	**LRS-56-28**
	1456	52.00	43.00	34.00	24.00	**LRS-59-28**



LRS56 FRONT VIEW



LRS59 FRONT VIEW



BOTTOM VIEW

DIMENSIONS:

MODEL	A	B	C	D	E	F	G	H	J	K	L	M
LRS-56	11.50 (292.1)	4.34 (110.2)	-	-	2.68 (68.1)	3.000 (76.2)	7.125 (181.0)	7.343 (186.5)	-	-	.42 (10.7)	3.500 (88.9)
LRS-59	13.62 (345.9)	6.62 (168.1)	2.92 (74.2)	8.000 (203.2)	-	-	-	-	1.65 (41.9)	4.125 (104.8)	-	-

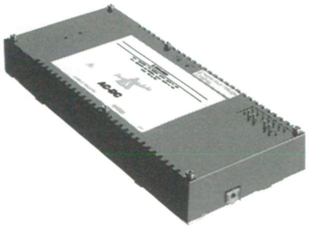
WEIGHT:

MODEL	NET LBS	SHIP LBS
LRS-56	9.5	11.0
LRS-59	16.5	19.0

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 8-32 UNC-2B TAPPED HOLES FOR CUSTOMER MTG.
   SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).
   "A" HOLES FOR LRS-56 ONLY.
   "B" HOLES FOR LRS-59 ONLY.
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES
   TO ALLOW FOR AIR FLOW.

PD600 Series High density rectifier modules



Wide Range Input:
88 - 265VAC

Power Factor Correction:
EN61000-3-2

EMI Class B Conducted & Radiated Emission
EN55022B, FCC20780B

High Efficiency (90% typ.)

Low Profile (1.08")

Remote On/Off

N+1 Parallel Operation

Wide Range Output

Aux. Power Supply

Inverter Good Signal

The PD600 is designed as an integrated module providing AC/DC conversion, PFC, filtering, as well as monitoring and signal generation in one unit.

A custom power supply is achieved by incorporating the PD module with a PCB, heatsink, and output connector to provide an extremely compact mechanical design, with worldwide Safety Agency Approvals, backed by a 2 year warranty.

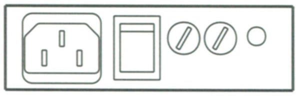
The PD600 module offers maximum design flexibility for Telecommunications and related applications.

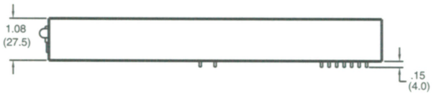
Similar products		**Page**
FE	Complete Solution-Fan Cooled	66
PF/PT	Module Solutions	88
PH	DC-DC	82
JFS	High Power Chassis Mount	28

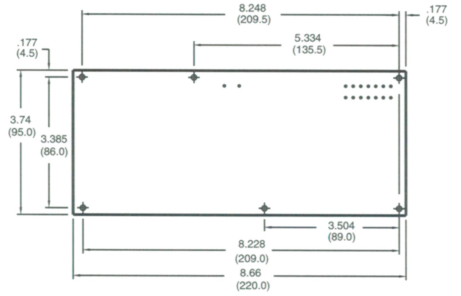
AC Input	88-265 or 187-265VAC, 47-63Hz.
Efficiency	85% @ 88-265VAC band. 90% @ 187-265VAC band.
Power Factor Correction	Compliant to EN 61000-3 and EN60555-2.
Input Current	4.2A @ 88-265VAC band. 3.0A @ 187-265VAC band.
Inrush Current Limiting	25A max. @ 265 VAS.
Conducted Radio EMI	The standard PD600-230-48 meets Level B EMI (conducted) to FCC 20780B and EN55022B.
Withstand Voltage	Input to Output – 3.0kVAC Input to Baseplate – 1.5kVAC for 1 minute. Output to Baseplate – 500VDC for 1 minute.
Output Voltage Adj Range	24 to 58.5VDC.
Line Regulation	0.5%.
Load Regulation	0.5%.
Ripple and Noise	400mV.
Bulk Power Supply	370 VDC. 1.5A max.
Auxiliary Bias Supply	11-13VDC, 30mA max.
Hold-up Time	minimum 5ms. (Higher with external capacitor added).
Overcurrent Protection	Constant Power Characteristic (630W) with Automatic Recovery.
Overvoltage Protection	60-62VDC.
Cooling	Conduction Cooled.
Operating Temperature Range	-20°C to +85°C (baseplate) ; -20°C to +45°C (ambient).
Storage Temperature	-40°C to +85°C.
Temperature Coefficient	0.02% per °C.
Operating Humidity	30-95% RH (No dewdrop).
Storage Humidity	10-95% RH (No dewdrop).
Isolation Resistance	More than 100MOhm at 25°C and 70% RH.
Shock	Less than 20G (in package).
Safety Agency Approval	Built to meet UL1950, CSA22.2 No. 234, EN60950, CE low voltage directive.
Warranty	2 years.

Preliminary

OUTPUT	NOMINAL INPUT (VDC)	POWER (W)	AMPS	MODEL
50.5V	110	404	8.0	**PD600230-48**
	220	606	12.00	







NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 6x M3 EMBOSS, TAPPED AND COUNTERSUNK HOLES FOR CUSTOMER MTG. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .39 (10.0).
3. WEIGHT: 750 GRAMS

FE Series

Compact, rack-mountable rectifiers

High Density

Low Cost

Modular and Scaleable

Hot Plug N+1 Redundancy

Integral Diagnostics

Automatic Fault Reset

Wide Range Input & Power Factor Correction

Battery Plant Compliant

Front Panel Monitoring

Bellcore Compliant

Worldwide Safety Agency Approvals

Standard Racking System

Lambda's FE Series modular front ends are the ideal foundation for fault-tolerant distributed power architectures. Designed specifically for telecommunications and high-end computer applications, the FE Series is available in 24 or 48 VDC output modules. Delivering from 500W to 6kW of scalable power, all models are Bellcore and ETSI compliant, and meet FCC Class B EMI emissions standards when mounted in "N" or "L" version rack systems. In addition, the FE Series takes up 35% less space than the nearest competitor, and features remote diagnostics, overvoltage and overtemperature protection for remote site use. Hot pluggable and N+N redundant, Lambda's FE Series Power Modules and FE Series Racking System are the most reliable, cost efficient system solutions available . They make designing, building and qualifying your system easier, quicker, and much less expensive.

Similar products		**Page**
JFS	Chassis Mount	28
PD600	Convection Cooled	64
WLR2800	Higher Power	70

AC Input	85-265VAC, 47-63Hz for FE0500, FE1000 & FE1500. 170-265VAC, 47-63Hz for FE2000.
Efficiency	79% typical for 50-100% load without isolation diodes.
Power Factor Correction	0.95 minimum at full load. Compliant to EN60555-2.
Hot Maintenance	Unit is capable of being inserted and extracted with all operational voltages present, with or without Or-ing diode option.
Surge Current Capability	±10% of max. unit load from 10% to 100% load. Current sharing is accomplished via a single wire connection.
Surge Immunity	IEC-1000-5 Level 3 Standard. IEC-1000-5 Level 4, with external MOV's. EN61000-4 (-2,-3,-4,-5,-6,)
Conducted EMI	Module/"X" Rack System: FCC-CFR Part 15, Class A. EN55022 Class A , for conducted & radiated emissions. "L" & "N" Rack Systems: FCC-CFR Part 15, Class B and, EN55022, Class B for Conducted. FCC-CFR Part 15, Class A and EN55022 Class A for radiated emissions.
Conducted Battery Noise	Bellcore TR-NWT-001089, TR-TSY000947, Cispr 22 Phosphometric Noise.
Line Regulation	1.0% from no load to full load. 85-265VAC (170-265VAC for FE2000).
Ripple and Noise	250mV pk-pk max on 24V model. 500mV pk-pk on 48V model. EIAJ RC-9002A procedure (20Mhz bandwidth limit).
Auxiliary Bias Supply	12VDC at 50mA.
Hold-up Time	Output will be maintained above lower limit of output voltage range for 16msec. Upon loss/disconnect of AC input, when operated at Vout nominal/full load.
Overvoltage Protection	Adjustable non-latching unit shutdown.
Overload Protection	The power module limits the output current to approximately 110% of the full power rating. The module will withstand an indefinite short circuit without damage and is self-recovering.
Operating Temperature Range	-40°C to +70°C ambient. (-40°C requires 30 min. warmup; 50°C to 70°C, derating required.
Storage Temperature	-40°C to +85°C.
Humidity	0 to 95% (non-condensing).
Temperature Drift	±2% over the entire temperature range and life.
Isolation	Input to Chassis –1.5K VAC. Input to Output – 3.0K VAC. Output to Chassis –500 VDC.
Vibration and Shock	NEBS rack system compliant with Bellcore GR-63-CORE, ZONE 4, Upper Level.
Output Good Signal	Signal indicates output is present and inverter is operational.
Input Good Signal	Provides fault status on AC line.
Led Status Indicator	AC GOOD LED – Indicates input power is present. DC GOOD LED – Indicates DC output voltage is present. OT LED – Indicates thermal shutdown has occurred. OUTPUT CURRENT LED – Ladder displays approximate percentage of output current.
Overtemperature Protection	Internal circuitry prevents damage in the event of excessive ambient operating temperature. The output spontaneously returns when the overtemperature condition is cleared.
Remote On/Off	Standard: Contact closure or TTL Low – output enabled. Contact open or TTL High – output disabled.
Safety Agency Approval	UL1950, IEC950, EN 60950, CSA 22.2-234, CE MARK (LVD)
Warranty	2 years.

Individual Modules

OUTPUT (ADJ)	POWER (W)	MAX CURRENT (A)	MODEL
24V (20-29)	500	25.0	**FE0500-24NA**
	500	25.0	**FE0500-24RA**[1]
	1000	50.0	**FE1000-24NA**
	1000	50.0	**FE1000-24RA**[1]
	1500	75.0	**FE1500-24NA**
	1500	75.0	**FE1500-24RA**[1]
	2000	91.0	**FE2000-24NA**
	2000	91.0	**FE2000-24RA**[1]
48V (40-58)	500	11	**FE0500-48NA**
	500	11	**FE0500-48RA**[1]
	1000	21	**FE1000-48NA**
	1000	21	**FE1000-48RA**[1]
	1500	32	**FE1500-48NA**
	1500	32	**FE1500-48RA**[1]
	2000	42	**FE2000-48NA**
	2000	42	**FE2000-48RA**[1]

[1] Redundant, or-ing diodes included in this model.

Racking Systems

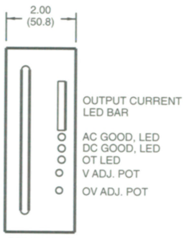
MAXIMUM NUMBER OF MODULES			
500W	1000W	1500/2000W	MODEL
8			**FE4K-X***
7			**FE4K-N***
5			**FE4K-L*-24**
5			**FE4K-L*-48**
	5		**FE5K-X***
	4		**FE5K-N***
	3		**FE5K-L*-24**
	3		**FE5K-L*-48**
		3	**FE6K-X***
		3	**FE6K-N***
		2	**FE6K-L*-24**
		2	**FE6K-L*-48**

***** Specify **N** for NEBS/Telcom (24"), or **E** for EIA (19")
EIA Mounting Flanges are located at the front of the Rack.
Telecom mounting flanges are center mounted per Bellcore NEBS requirements.

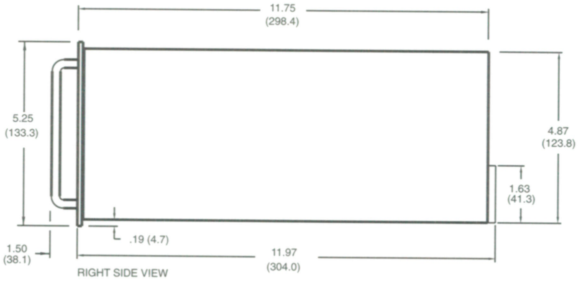
Filler panels are available, please contact factory for details.

Compact, rack-mountable rectifiers

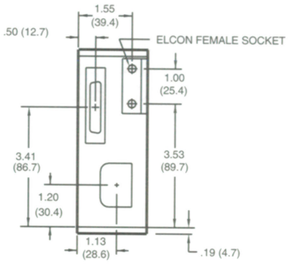
FE-500



FRONT VIEW



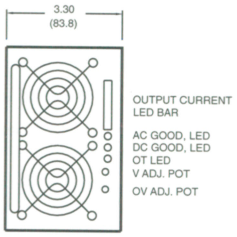
RIGHT SIDE VIEW



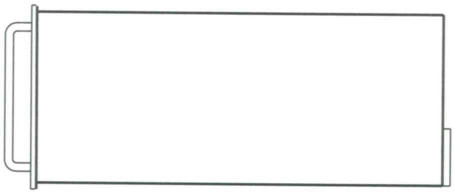
REAR VIEW

WEIGHT: NET 6.0 LBS, SHIPPING 7.0 LBS

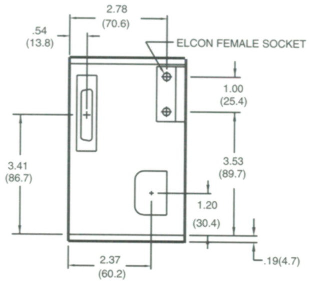
FE-1000



FRONT VIEW



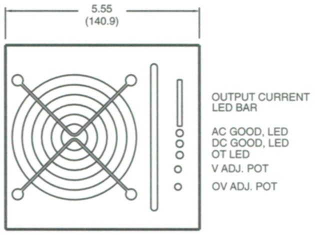
RIGHT SIDE VIEW



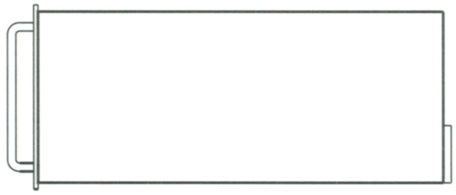
REAR VIEW

WEIGHT: NET 7.0 LBS, SHIPPING 8.0 LBS

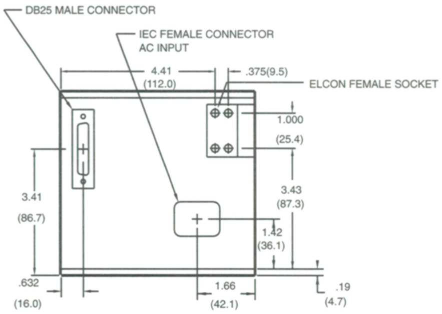
FE-1500/2000



FRONT VIEW



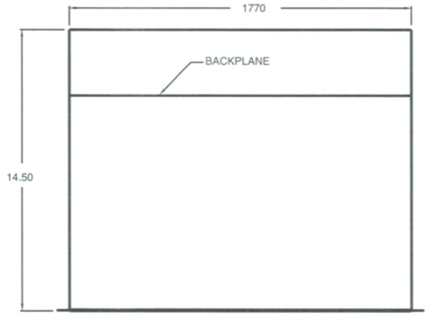
RIGHT SIDE VIEW

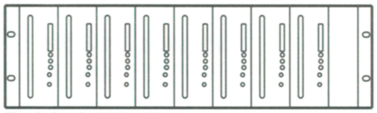


REAR VIEW

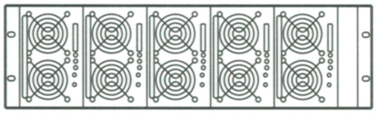
WEIGHT: NET 9.0 LBS, SHIPPING 10.0 LBS

FE RACK

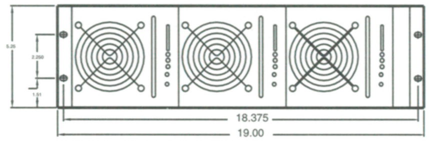




FE 4K RACK (XE VERSION SHOWN)

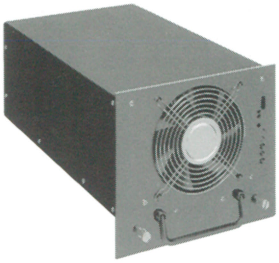


FE 5K RACK (XE VERSION SHOWN)



FE 6K RACK (XE VERSION SHOWN)

WLR2800 Series High power rectifiers



High Density

International Safety Approvals

EMC Directive 89/336/EEC Compliant

Single Phase AC Input

Power Factor Correction To EN6100-3-2

Hot Swap N+1 Capability

Integral Diagnostics

Front Panel Monitoring

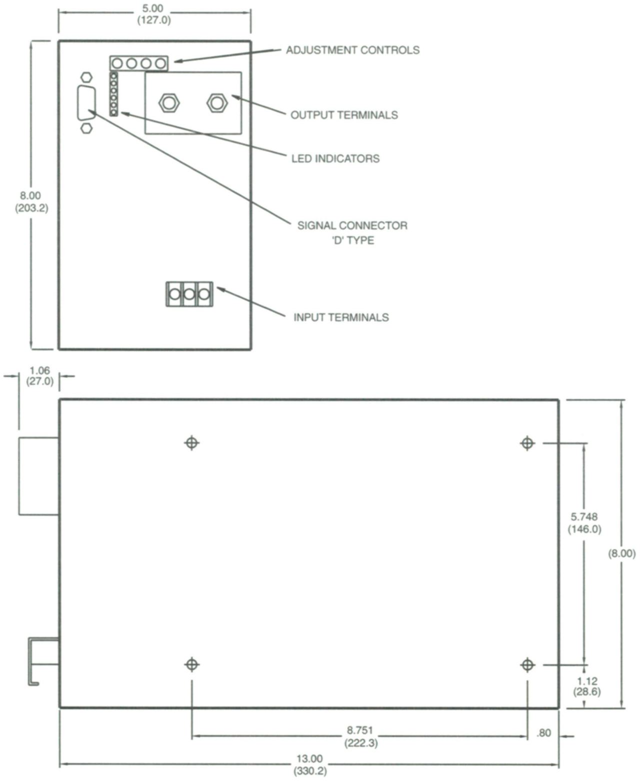
Lambda's WLR2800 rectifier is a high density switch mode power supply designed primarily for the Telecommunications and Datacom markets where high quality and cost effective power solutions are required. The WLR2800 operates from a single phase supply and is available in 24V or 48V nominal outputs that can be fitted with a selection of input and output connectors. It is designed to meet many of the international approvals required in today's market.

As a rectifier, it also provides an ideal cost effective power factor corrected front end solution for distributed power and bulk power applications. The WLR2800 features comprehensive protection and alarm facilities and is available with a range of different options, including Hot Swap and N+1 redundancy.

Similar products		**Page**
FE	Lower Power, System Solution	66
PD600	Convection Cooled	64

EMC	EN55022 Level B and FCC Part 15 Subpart J Class B for line conducted radiated emissions, EN61000-3-2 for Harmonic Distortion, EN61000-4-4 and EN61000-4-5 for Conducted Immunity, EN61000-4-2 for Electrostatic Discharge Immunity, ENV50140/ENV50204 for Radiated Immunity.
AC Input	176-264VRMS, 46-63Hz.
Efficiency	>84%(50% load), >85%(full load).
Input Current	Sinusoidal to meet harmonic limitations of EN61000-3-2.
Power Factor Correction	>0.95 (10-100%).
Output Voltage Accuracy	48 VDC±0.1, 24VDC±0.1.
Line Regulation	0.025% from Vmin to Vmax input.
Load Regulation	0.25% from no load to full load.
Current Limit	Constant current down to approximately 60% Vnom then foldback down to short circuit.
Hold-up Time	User definable (Consult Technical Sales).
Overvoltage Protection	In parallel configurations only - latches off the unit which produced the overvoltage condition. The latched unit may be reset by strobing the AC input, standby switch or remote inhibit input.
Operating Temperature Range	-10°C to +55°C.
Storage Temperature	-40°C to +85°C.
Temperature Coefficient	±0.015%/°C.
Humidity	5% to 95% (non-condensing).
Isolation	Input - ground 2.25kV. Output - ground 2.25kV. Input - output 4.5kV.
Vibration and Shock	Designed to TR-NWT-000063
Output Current Monitor	An analog signal proportional to the load current being delivered by the unit. 48VDC unit = 0.1V/A, 24VDC unit = 0.05V/A. Accuracy from 10% to 100% I Nom is ±5%.
Led Status Indicator	Input Healthy LED (Optional), Output Healthy LED, Current Limit LED (Optional), Rectifier Failure LED, Overvoltage LED (Optional), Overtemperature LED (Optional), Fan Failure LED, Standby LED.
Overtemperature Protection	A non-latching, overtemperature sensing circuit inhibits the rectifier output for the duration of the overtemperature condition.
Remote Sensing	Allows unit to sense voltage at load.
Alternate Input Source	Generator conforming to BS5514, Class A1 governing.
Safety Agency Approval	IEC950, EN60950, UL1950, CSA 22.2 950-95, EN41003, CE marked (Low Voltage Directive).
Remote Inhibit/Standby (Optional)	Allows shutdown of unit by the application of an external voltage.
Output Voltage Trim (Optional)	Permits output voltage to be programmed by an externally applied voltage.
Output Droop (Optional)	Increases output load regulation to aid sharing in multi-unit applications.
Output Healthy (Optional)	Identifies failed unit in parallel with other good units or battery.
Warranty	1 year.

OUTPUT	POWER (W)	MAX CURRENT AMPS AT 40°	MODEL
24V	2800	116.0	**WLR2800/24**
48V	2800	58.0	**WLR2800/48**



NOTES:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 4x M8 TAPPED HOLES FOR CUSTOMER MTG.
SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .XXX
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES TO ALLOW FOR AIR FLOW.

DC-DC Converters

PP Series

Low power isolated DC-DC converters

Low Profile

Available in Single & Dual Outputs

5/12/24/48 Volt Inputs

High Efficiency

Isolated Outputs

Low Parts Count

Wide Input Range

Flow Solderable

Solvent Proof

Industry Standard Footprint

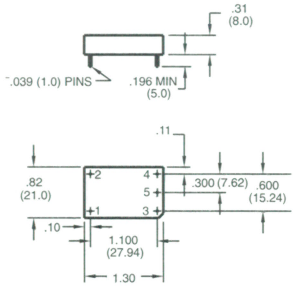
For lower power (1.5W to 6W) applications, Lambda's low profile, low cost PP Series is an ideal solution. They have industry-standard pin-outs, a height of only 8mm and are available in single (5,12, & 15) and dual (±12 & ±15) outputs with 5, 12, 24, & 48 volt inputs.

Similar products		**Page**
PM	Medium Power	76
SM	(10-30W) Surface Mount	78
KWS	AC-DC BD Mount	10

DC Input	5V (4.5 to 7.2V). 12V (9 to 18V). 24V (18 to 36V). 48V (32 to 63V).
Line Regulation	0.4%.
Load Regulation	0.6%.
Ripple and Noise	120mV pk-pk for 5V ; 150mV pk-pk for 12V and 15V.
Setpoint Accuracy	±5%.
Overload Protection	Avoid overloading auxiliary outputs for greater than 30 seconds.
Operating Temperature Range	-20°C to +71°C. Derate linearly above +50°C. from full load to 20% at +71°C.
Storage Temperature	-40°C to +85°C.
Temperature Coefficient	0.03% per °C.
Isolation	Input to chassis – 500VAC. Input to Output – 500VAC. Output to Chassis – 500VDC. 25°C and 70% humidity.
Warranty	2 years.

VOLTAGE (V)	CURRENT (A)	POWER (W)	MODEL 5V INPUT	12V INPUT	24V INPUT	48V INPUT
Single Outputs						
5	0.30	1.50	**PP1R5-5-5**	**PP1R5-24-5**	**PP1R5-24-5**	**PP1R5-48-5**
5	0.60	3.00	**PP3-5-5**	**PP3-12-5**	**PP3-24-5**	**PP3-48-5**
5	2.00	10.00	**PP10-5-5**	-	-	-
12	0.12	1.44	**PP1R5-5-12**	**PP1R5-12-12**	**PP1R5-24-12**	**PP1R5-48-12**
12	0.25	3.00	**PP3-5-12**	**PP3-12-12**	**PP3-24-12**	**PP3-48-12**
15	0.10	1.50	**PP1R5-5-15**	**PP1R5-12-15**	**PP1R5-24-15**	**PP1R5-48-15**
15	0.20	3.00	**PP3-5-15**	**PP3-12-15**	**PP3-24-15**	**PP3-48-15**
Dual Outputs						
±12	0.06	1.44	**PPD1R5-5-1212**	**PPD1R5-12-1212**	**PPD1R5-24-1212**	**PPD1R5-48-1212**
±12	0.12	2.88	**PPD3-5-1212**	**PPD3-12-1212**	**PPD3-24-1212**	**PPD3-48-1212**
±12	0.42	10.00	**PPD10-5-1212**	-	-	-
±15	0.05	1.50	**PPD1R5-5-1515**	**PPD1R5-12-1515**	**PPD1R5-24-1515**	**PPD1R5-48-1515**
±15	0.10	3.00	**PPD3-5-1515**	**PPD3-12-1515**	**PPD3-24-1515**	**PPD3-48-1515**
±15	0.20	6.00	**PPD6-5-1515**	**PPD6-12-1515**	**PPD6-24-1515**	**PPD6-48-1515**
±15	0.33	10.00	**PPD10-5-1515**	-	-	-

PP1/PPD1



1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.

PP1 TERM ASSIGNMENTS:

TERM	ASSIGNMENTS:
1	+V INPUT
2	-V INPUT
3	+V OUTPUT
4	-V OUTPUT

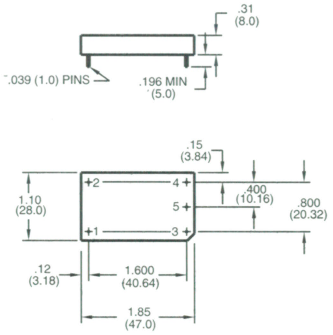
PP1 WEIGHT: 15 GRAMS.

PPD1 TERM ASSIGNMENTS:

TERM	ASSIGNMENTS:
1	+V INPUT
2	-V INPUT
3	+V OUTPUT
4	-V OUTPUT
5	COM OUTPUT

PPD1 WEIGHT: 15 GRAMS.

PP3/PPD3



1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.

PP3 TERM ASSIGNMENTS:

TERM	ASSIGNMENTS:
1	+V INPUT
2	-V INPUT
3	+V OUTPUT
4	-V OUTPUT

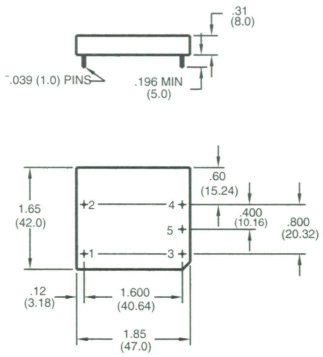
PP6 WEIGHT: 25 GRAMS.

PPD3 TERM ASSIGNMENTS:

TERM	ASSIGNMENTS:
1	+V INPUT
2	-V INPUT
3	+V OUTPUT
4	-V OUTPUT
5	COM OUTPUT

PPD6 WEIGHT: 25 GRAMS.

PP6/PPD6



1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.

PP6 TERM ASSIGNMENTS:

TERM	ASSIGNMENTS:
1	+V INPUT
2	-V INPUT
3	+V OUTPUT
4	-V OUTPUT

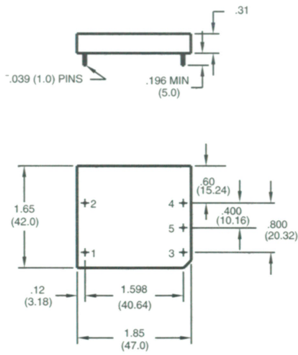
PP6 WEIGHT: 30 GRAMS.

PPD6 TERM ASSIGNMENTS:

TERM	ASSIGNMENTS:
1	+V INPUT
2	-V INPUT
3	+V OUTPUT
4	-V OUTPUT
5	COM OUTPUT

PPD6 WEIGHT: 30 GRAMS.

PP10/PPD10



1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.

PP10 TERM ASSIGNMENT

TERM	ASSIGNMENT
1	+V INPUT
2	-V INPUT
3	+V OUTPUT
4	-V OUTPUT

PP10 WEIGHT: 40 GRAMS

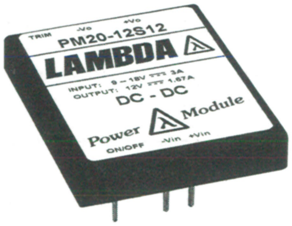
PPD10 TERM ASSIGNMENTS:

TERM	ASSIGNMENTS:
1	+V INPUT
2	-V INPUT
3	+V OUTPUT
4	-V OUTPUT
5	COM OUTPUT

PPD10 WEIGHT: 40 GRAMS.

PM Series

5-30W low profile DC-DC converters



Less than .35" Profile

Industry Standard Footprints

Wide Input Range 2:1

Wave Solderable

Agency Approved

High Density

12, 24 & 48V Inputs

2 Year Warranty

Telecom Compliant

Lambda's isolated PM Series single, dual and triple output DC-DC converters are designed specifically for telecom, datacom and computer applications, with 12V, 24V and 48V inputs. They are the only converters which meet all the safety agency requirements for these markets, including Bellcore and ETSI.

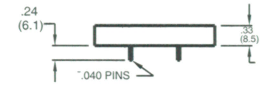
The PM Series uses 100% SMT technology, eliminating point to point wiring - the largest source of potential quality problems in DC-DC converters. Their highly automated continuous flow production line is located in North America, providing the industry's fastest delivery for production quantities - only 4 weeks from confirmed order to shipment.

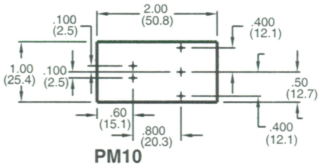
When you compare features, specifications and reliability, the PM Series is the clear choice for distributed power applications.

Similar products		**Page**
SM Series	Surface Mountable	78
RM Series	Ultra High Efficiency	80
PP Series	Less than 10W, 5V Input	74

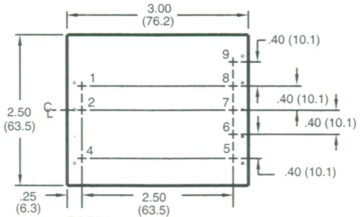
DC Input	9-18V on 12V models; 18-36V on 24V models. 36-75V on 48V models.
Transient Response	2.0% deviation, recovery to 1.0% of final value in 1ms. Refers to 25% load step.
Input Line Disturbances	12V input models 25V for 100ms. 24V input models 50V for 100ms. 48V input models 100V for 100ms and ETSI Standard ETS 300132 (100V, 10 joules pulse).
No Load Input Power	0.4W.
Inrush Current Limiting	All models meet the ETSI-300-132 requirements for inrush current less than 50A peak.
EMI	24/48V input models meet EN55022 (Level B), FCC Part 15 (Level B), ANSI 63.12-1987 (as called out in Bellcore TA-NWT-001089 Issue 2) with an external filter.
Output Voltage Accuracy	±1% single output. ±1.5% dual output.
Output Voltage Adj Range	PM15, 20 & 30 main outputs ±10% via TRM terminal.
Line Regulation	0.2% for single and dual output, 3.0% (typical) on auxiliary outputs of triple output.
Load Regulation	1.0% (typical) for single and main outputs, 8% (typical) aux. output of triple output models from 25% to 100% load, and with greater than 5W main output load.
Ripple and Noise	75mV pk-pk on 3V & 5V units. 100mV pk-pk on 12V, 15V single & dual output units. 120mV pk-pk on auxiliary outputs of triple output units.
Start Up	Within 200ms after application of nominal input voltage.
Overshoot	No output overshoot at turn-on, turn-off or power failure.
Overvoltage Protection	Overvoltage protection clamps the output to a predetermined level.
Short Circuit Protection	Continuous on main output only of all models. Aux. outputs: 30 ms. max.
Cooling	Convection allows full O/P rating.
Operating Temperature Range	-40°C to +70°C.
Altitude	10,000 ft. – maximum operating. 45,000 ft. – storage.
Storage Temperature	-40°C to +105°C.
Fungus Proofing	Units are inherently fungus inert.
Temperature Coefficient	±0.015% per °C. ±0.03% per °C. on auxiliary output of triple output models
Humidity	5% to 95% (non-condensing).
Isolation Resistance	10MOhm.
Isolation Voltage	Input to Output: 900VAC, 1500VDC on 48V models. 500VAC,700VDC on 12V and 24V models.
Thermal Cycling	1hr. @ -25°C ramped to 1hr. @ +25°C, ramped to 1hr. @ +100° C.
Vibration and Shock	2.5G RMS, 10Hz-50Hz, random vibration, 10 minutes per axis.
Remote On/Off	PM15, 20 & 30: High (open) enables unit, Low (short) shuts operation down.
Safety Agency Approval	UL, CSA, EN60950 and CE Mark.
Warranty	2 years.

VOLTAGE (V)	CURRENT (A)	POWER (W)	MODEL		
			12V INPUT	24V INPUT	48V INPUT
Single Outputs					
3.3	1.27	4.2	**PM05-12S03**	**PM05-24S03**	**PM05-48S03**
3.3	2.55	8.4	**PM10-12S03**	**PM10-24S03**	**PM10-48S03**
3.3	3.75	12.4	**PM15-12S03**	**PM15-24S03**	**PM15-48S03**
3.3	5.00	16.5	**PM20-12S03**	**PM20-24S03**	**PM20-48S03**
3.3	7.50	24.75	**PM30-12S03**	**PM30-24S03**	**PM30-48S03**
5.0	1.00	5	**PM05-12S05**	**PM05-24S05**	**PM05-48S05**
5.0	2.00	10	**PM10-12S05**	**PM10-24S05**	**PM10-48S05**
5.0	3.00	15	**PM15-12S05**	**PM15-24S05**	**PM15-48S05**
5.0	4.00	20	**PM20-12S05**	**PM20-24S05**	**PM20-48S05**
5.0	6.00	30	**PM30-12S05**	**PM30-24S05**	**PM30-48S05**
12.0	0.42	5	**PM05-12S12**	**PM05-24S12**	**PM05-48S12**
12.0	0.83	10	**PM10-12S12**	**PM10-24S12**	**PM10-48S12**
12.0	1.25	15	**PM15-12S12**	**PM15-24S12**	**PM15-48S12**
12.0	1.67	20	**PM20-12S12**	**PM20-24S12**	**PM20-48S12**
12.0	2.50	30	**PM30-12S12**	**PM30-24S12**	**PM30-48S12**
15.0	0.33	5	**PM05-12S15**	**PM05-24S15**	**PM05-48S15**
15.0	0.67	10	**PM10-12S15**	**PM10-24S15**	**PM10-48S15**
15.0	1.00	15	**PM15-12S15**	**PM15-24S15**	**PM15-48S15**
15.0	1.33	20	**PM20-12S15**	**PM20-24S15**	**PM20-48S15**
15.0	2.00	30	**PM30-12S15**	**PM30-24S15**	**PM30-48S15**
Dual Outputs					
±12	0.21	5	**PM05-12D12**	**PM05-24D12**	**PM05-48D12**
±12	0.42	10	**PM10-12D12**	**PM10-24D12**	**PM10-48D12**
±12	0.63	15	**PM15-12D12**	**PM15-24D12**	**PM15-48D12**
±12	0.83	20	**PM20-12D12**	**PM20-24D12**	**PM20-48D12**
±12	1.25	30	**PM30-12D12**	**PM30-24D12**	**PM30-48D12**
±15	0.167	5	**PM05-12D15**	**PM05-24D15**	**PM05-48D15**
±15	0.33	10	**PM10-12D15**	**PM10-24D15**	**PM10-48D15**
±15	0.50	15	**PM15-12D15**	**PM15-24D15**	**PM15-48D15**
±15	0.67	20	**PM20-12D15**	**PM20-24D15**	**PM20-48D15**
±15	1.00	30	**PM30-12D15**	**PM30-24D15**	**PM30-48D15**
Triple Outputs					
3.3, ±12	7, ±1	30	**PM30-12T03-12**	**PM30-24T03-12**	**PM30-48T03-12**
5, ±12	5, ±1	30	**PM30-12T05-12**	**PM30-24T05-12**	**PM30-48T05-12**

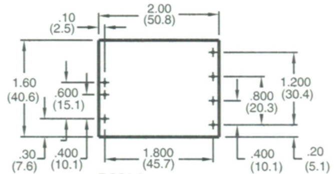




PM10



PM30



PM20

NOTE: DIMENSIONS ARE IN INCHES EXCEPT
DIMENSIONS ( ) ARE IN MM.

SM Series

Surface mountable DC-DC converters

Surface Mount

Low Profile

No Heatsink Required

10ms Start-up

Remote on/off

Bellcore Compliance

Worldwide Safety Agency Approvals

Overvoltage Protection

24V or 48V Nominal Inputs

Lambda's new SM Series is the first family of surface mount DC-DC converters that is designed specifically for card level distributed power applications targeted at the Telecom and Computer markets.

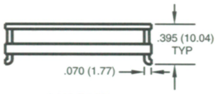
Using 100% SMT technology in combination with our patented thermal management strategy, the SM Series offers a non-encapsulated solution reducing the weight restrictions required for pick and place operation with existing vacuum end effectors.

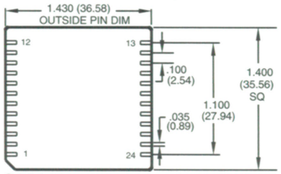
The SM Series is available in 56 models at power ranges from 5 to 30 watts with standard input and output voltage ranges.

Similar products		Page
PM	10-30W Through-hole converters	76
PP	Less Than 10W, 5V Input	74
RM	High Efficiency 90%@5V	80
FE	Front End for Distributed Power	66

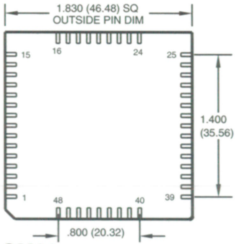
DC Input	18-36VDC (24V nominal). 36-75VDC (48V nominal).
Efficiency	80% (Typical).
EMI	Level B VDE, FCC, Bellcore 1089 with an external filter.
Transient Response	After application of 0 to 25% of full load step in output current, output voltage will stay within 2% of preset value, recovering to within 1% in less than 1ms.
No Load Input Power	0.4W.
Output Voltage Accuracy	±1%.
Output Voltage Adj Range	±10% via TRM terminal.
Line Regulation	.2% on Singles. .4% on Dual +V to -V.
Load Regulation	Singles: 1% max of total output. Duals: 1% max -V to +V. 2% max -V or +V to common. Triples: 1% max for main outputs. 5% on auxiliary channels. (10% main pre-load required).
Cross Regulation	3% of max on triples.
Ripple and Noise	Singles: 75mVpp on 3V & 5V. 100mVpp on 12V & 15V. Duals: 100mVpp Triples: 120mVpp (max).
Start Up	Within 10mS after application of nominal input voltage.
Overshoot	No overshoot at turn on, turn off, power failure or removal of short circuit.
Short Circuit Protection	Continuous.
Cooling	Convection allows full output rating.
Operating Temperature Range	SM10: -40°C to 70°C. SM20: -40°C to 60°C. SM30: -40°C to 50°C.
Altitude	10,000 ft max operating. 45,000 ft max storage.
Storage Temperature	-55°C to +125°C.
Fungus Proofing	Units are inherently fungus inert.
Temperature Coefficient	±0.015% per °C.
Humidity	5% to 95% (non-condensing).
Isolation	500VAC, 700VDC, 10M @ 24VDC input. 900VAC, 1500VDC, 10M @ 48VDC input.
Thermal Cycling	1 hr @ -20°C ramped to 1 hr @ +20°C ramped to 1hr @ +100°C.
Vibration and Shock	2.5G RMS, 10Hz, random vibration, 1 hour per axis.
Remote On/Off	(Open) enables unit, (Short) shuts operation down.
Safety Agency Approval	UL1950, CSA22.2-234, VDE/EN60950, CE Mark.
Warranty	2 years.

VOLTAGE (V)	CURRENT (A)	POWER (W)	MODEL 24V INPUT	 48V INPUT
Single Output				
3.3	1.27	4.20	**SM05-24S03**	**SM05-48S03**
3.3	2.55	8.40	**SM10-24S03**	**SM10-48S03**
3.3	5.00	16.50	**SM20-24S03**	**SM20-48S03**
3.3	7.50	24.75	**SM30-24S03**	**SM30-48S03**
5	1.00	5.00	**SM05-24S05**	**SM05-48S05**
5	2.00	10.00	**SM10-24S05**	**SM10-48S05**
5	4.00	20.00	**SM20-24S05**	**SM20-48S05**
5	6.00	30.00	**SM30-24S05**	**SM30-48S05**
12	0.42	5.00	**SM05-24S12**	**SM05-48S12**
12	0.83	10.00	**SM10-24S12**	**SM10-48S12**
12	1.67	20.00	**SM20-24S12**	**SM20-48S12**
12	2.50	30.00	**SM30-24S12**	**SM30-48S12**
15	0.33	5.00	**SM05-24S15**	**SM05-48S15**
15	0.67	10.00	**SM10-24S15**	**SM10-48S15**
15	1.33	20.00	**SM20-24S15**	**SM20-48S15**
15	2.00	30.00	**SM30-24S15**	**SM30-48S15**
Dual Output				
±12	0.21	5.00	**SM05-24D12**	**SM05-48D12**
±12	0.42	10.00	**SM10-24D12**	**SM10-48D12**
±12	0.83	20.00	**SM20-24D12**	**SM20-48D12**
±12	1.25	30.00	**SM30-24D12**	**SM30-48D12**
±15	0.17	5.00	**SM05-24D15**	**SM05-48D15**
±15	0.33	10.00	**SM10-24D15**	**SM10-48D15**
±15	0.67	20.00	**SM20-24D15**	**SM20-48D15**
±15	1.00	30.00	**SM30-24D15**	**SM30-48D15**
Triple Output				
3, ±12	7, 1	30.00	**SM30-24T03-12**	**SM30-48T03-12**
3, ±15	7, .8	30.00	**SM30-24T03-15**	**SM30-48T03-15**
5, ±12	5, 1	30.00	**SM30-24T05-12**	**SM30-48T05-12**
5, ±15	5, .8	30.00	**SM30-24T05-15**	**SM30-48T05-15**

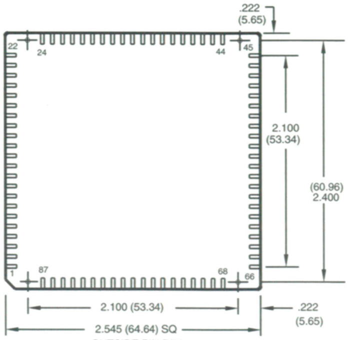




SM10 BOTTOM VIEW OUTLINE



SM20 BOTTOM VIEW OUTLINE

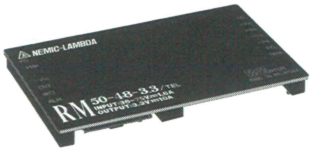


SM30 BOTTOM VIEW OUTLINE

NOTE: DIMENSIONS ARE IN INCHES
EXCEPT DIMENSIONS IN ( ) ARE IN MM.

RM Series

90% efficient, low profile DC-DC converters



No Heatsink Required

90% Efficiency @5V

Low Profile

High Power Density

Built-in Inrush Limiting

Power Module Diagnostics

Remote On/Off

Fault Reset

No Electrolytic or Tantalum Capacitor

EMI Filtering

-40°C to +85°C Operating Temperature Range

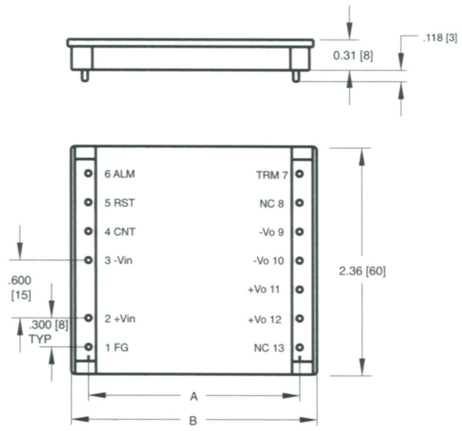
The latest addition to Lambda's power module line, the RM Series high performance DC-DC converters offer the highest efficiencies available on the market. And since less energy is dissipated as heat, you'll achieve much greater system densities. This makes the RM Series ideal for telecommunication applications such as broad band distribution, ATM exchanges, LANs, multimedia systems and other applications where high efficiency and low profile are critical.

The features included in the RM Series allow for hot plug, EMI filtering, diagnostics and control, making the RM Series ideally suited for the highest performance systems.

Similar products		Page
PH	Low Cost	82
PM	Lower Cost	76

DC Input	36-75VDC.
Efficiency	RM30-48-2: 71% RM30-48-3.3: 80% RM30-48-5: 86% RM50-48-2: 80% RM50-48-3.3: 86% RM50-48-5: 90% RM100-48-2: 80% RM100-48-3.3: 86% RM100-48-5: 90%
Input Current	0.36A to 2.32A
Inrush Current Limiting	3.0A.
Output Voltage Adj Range	Outputs can be adjusted ±10% using resistive or voltage programming.
Line Regulation	20mV. No load to full load.
Load Regulation	40mV. No load to full load.
Ripple and Noise	100mV pk-pk. (Ext cap required).
Overcurrent Protection	Constant current limiting with automatic recovery (all models automatically shut down after 0.5-1.5 seconds in overcurrent condition with the output voltage less than the alarm level).
Overvoltage Protection	Internal circuitry latches off the power supply in the event of an overvoltage condition.
Cooling	No heatsink required. Forced air cooling is required: 1.5m/s or 295LFM.
Operating Temperature Range	Ambient operating temperature from -20°C to +85°C (-40°C startup guaranteed). Baseplate temperature from -20°C to +100°C.
Storage Temperature	-40°C to +105°C.
Temperature Coefficient	0.03% per °C.
Isolation	Input to output – 2500VDC. Output to chassis – 500VAC. Input to ground – 500VDC.
Monitoring Signals	Output alarm signal is activated by an overvoltage, overcurrent, over temperature or low output voltage condition. The alarm signal is an open collector type capable of sourcing 10mA. The signal goes high under a fault condition after 0.5-1.5 seconds.
Reset Signal	External connection between reset terminal and + output terminal resets the output after a shutdown condition.
Remote On/Off	Short between CNT terminal and +Vin enables output; open circuit disables output.
Safety Agency Approval	UL1950, CSA234, EN60950 and CE Mark.
Warranty	3 years.

VOLTAGE (V)	CURRENT (A)	POWER (W)	MODEL
2.0	6.0	12.0	**RM30-48-2**
2.0	10.0	20.0	**RM50-48-2**
2.0	20.0	40.0	**RM100-48-2**
3.3	6.0	19.8	**RM30-48-3.3**
3.3	10.0	33.0	**RM50-48-3.3**
3.3	20.0	66.0	**RM100-48-3.3**
5.0	6.0	30.0	**RM30-48-5**
5.0	10.0	50.0	**RM50-48-5**
5.0	20.0	100.0	**RM100-48-5**



DIMENSIONS:

MODEL	A	B
RM30	2.200 (56.0)	2.56 (65.0)
RM50	3.500 (89.0)	3.860 (98.0)
RM100	4.200 (107.0)	4.570 (116.0)

WEIGHT:

MODEL	LBS
RM30	.16
RM50	.22
RM100	.27

PH Series

High power DC-DC converters

Wide Range Input

High Density

Output Adjustment Capability

Simple Or Full Function Modules

Remote On/off

Fixed Switching Frequency

Low Cost

International Safety Approvals

Parallel Operation

Remote Sense

Full Function Modules. Lambda's Full Function PH Series modules achieve 5 million hours MTBF. Active single wire current sharing coupled with a module good signal enables these low cost converters to easily accommodate N+1 and scalable power systems. They feature an auxiliary power supply output designed to power external monitoring signals, +20%/-60% output adjustability and up to 90% efficiency-ideal for all computer and leading edge communications applications.

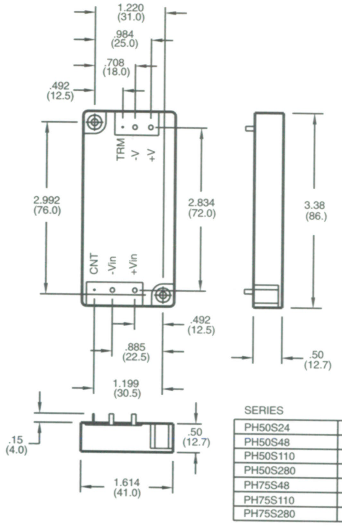
Simple Function Modules. The PH Series Simple Function modules are the highest density converters on the market today, achieving 62W/in^3. They demonstrated 5 million hours MTBF and are designed for non-redundant applications-yet they can operate in a brute force parallel mode. The high density and low cost of the PH Series Simple Function modules makes distributed power viable in virtually any application. Additional features include remote on/off and a ±10% output adjustment.

Similar products		**Page**
RM	High Efficiency	80
PM	Low Power DC-DC	76
KW	Board Mount AC-DC	10
SM	Surface Mount, Low Power	78

DC Input	200 - 400VDC for 280V PH Module. 88 - 185VDC for 110V PH Module. 36 - 76VDC for 48V PH Module. 18 - 36VDC for 24V PH Module.
Output Voltage Adj Range	The output voltage on all PH Series modules can be programmed by an external potentiometer or voltage source (±10% on Simple Function Modules, +20/-60% on Full Function Modules). Adjustment below the -60% range is possible with the appropriate preload. Consult the P Series Application Notes for further details.
Line Regulation	0.4% or 20mV (whichever is greater) over entire input range with constant load.
Load Regulation	0.8% or 40mV (whichever is greater) from no load to full load with constant input line.
Ripple and Noise	2V & 5V, 100mV pk-pk; 12V & 15V, 150mV pk-pk; 24V, 240mV pk-pk; 28V, 280mV pk-pk.
Auxiliary Bias Supply	Full Function PH Series modules have an auxiliary bias supply (8V @10mA) which can be used to power interface circuits(i.e., optocouples).
Parallel Operation	Full Function PH Series modules have a single star point connection of PC terminal which enables modules to current share. Current sharing guaranteed within 5% when connected per the application notes (typically within 2%).
Series Operation	All modules can be operated in series. Refer to the PH Series Application Notes for detailed requirements.
Overvoltage Protection	150%-180% on 2V and 3V models 125%-145% on 5V through 28V models. Inverter shutdown. Input power must be recycled to restore operation.
Overload Protection	Overcurrent protection will protect the module and load from overload with automatic recovery. Limit is set at ~105% to 140%.
Cooling	PH Series modules are conduction cooled. Contact the factory for cooling recommendations.
Operating Temperature Range	-20°C to +85°C base plate. -20°C to +100°C on PH300S, PH600S. Consult the factory for -40°C startup on all models.
Storage Temperature	-40°C to +85°C. -40°C to +100°C on the PH300S and PH600S.
Temperature Coefficient	0.02% per °C.
Isolation	Input to Output – 3kVAC. Input to Baseplate – 2.5kVAC.
Isolation Resistance	Output to Baseplate –100MOhm @ 500VDC @ 70% RH.
Inverter Good Signal	Full Function PH Series modules provide an inverter good status at the IOG terminal when the module is operating within limits.
Remote On/Off	Short terminal CNT to SG to turn on. Open circuit to turn OFF.
Remote Sensing	Sensing connections are provided to the regulation caused by the resistive drops in the output trace/leads. (Not available on PH50S, PH75S modules).
Safety Agency Approval	UL1950, CSA234, EN60950 and CE Mark.
Warranty	2 years.

VOLTAGE (V)	CURRENT (A)	POWER (W)	MODEL			
			24V INPUT	48V INPUT	110V INPUT	280V INPUT
Full Function Inputs						
2.0	15.00	30	–	**PH75F48-2**	**PH75F110-2**	**PH75F280-2**
2.0	20.00	40	**PH100F24-2**	–	–	–
2.0	30.00	60	–	**PH150F48-2**	**PH150F110-2**	**PH150F280-2**
2.0	60.00	120	–	**PH300F48-2**	**PH300F110-2**	**PH300F280-2**
3.3	15.00	45	–	**PH75F48-3**	**PH75F110-3**	**PH75F280-3**
3.3	20.00	60	**PH100F24-3**	–	–	–
3.3	30.00	90	–	**PH150F48-3**	**PH150F110-3**	**PH150F280-3**
3.3	60.00	180	–	**PH300F48-3**	**PH300F110-3**	**PH300F280-3**
5.0	15.00	75	–	**PH75F48-5**	**PH75F110-5**	**PH75F280-5**
5.0	20.00	100	**PH100F24-5**	–	–	–
5.0	30.00	150	–	**PH150F48-5**	**PH150F110-5**	**PH150F280-5**
5.0	60.00	300	–	**PH300F48-5**	**PH300F110-5**	**PH300F280-5**
12.0	6.30	75	–	**PH75F48-12**	**PH75F110-12**	**PH75F280-12**
12.0	8.40	100	**PH100F24-12**	–	–	–
12.0	12.50	150	–	**PH150F48-12**	**PH150F110-12**	**PH150F280-12**
12.0	25.00	300	–	**PH300F48-12**	**PH300f110-12**	**PH300F280-12**
15.0	5.00	75	–	**PH75F48-15**	**PH75F110-15**	**PH75F280-15**
15.0	6.70	100	**PH100F24-15**	–	–	–
15.0	10.00	150	–	**PH150F48-15**	**PH150F110-15**	**PH150F280-15**
15.0	20.00	300	–	**PH300F48-15**	**PH300F110-15**	**PH300F280-15**
24.0	3.20	75	–	**PH75F48-24**	**PH75F110-24**	**PH75F280-24**
24.0	4.20	100	**PH100F24-24**	–	–	–
24.0	6.30	150	–	**PH150F48-24**	**PH150F110-24**	**PH150F280-24**
24.0	12.60	300	–	**PH300F48-24**	**PH300F110-24**	**PH300F280-24**
28.0	2.70	50	–	**PH75F48-28**	**PH75F110-28**	**PH75F280-28**
28.0	3.60	100	**PH100F24-28**	–	–	–
28.0	5.40	150	–	**PH150F48-28**	**PH150F110-28**	**PH150F280-28**
28.0	10.80	300	–	**PH300F48-28**	**PH300F110-28**	**PH300F280-28**
Simple Function Inputs						
3.3	50.00	181.5	–	**PH300S48-3**	–	**PH300S280–3**
3.3	100.00	330	–	-	–	**PH600S280–3**
5.0	10.00	50	**PH50S24-5**	**PH50S48-5**	**PH50S110-5**	**PH50S280–5**
5.0	15.00	75	–	**PH75S48-5**	**PH75S110-5**	**PH75S280–5**
5.0	20.00	100	–	**PH100S48-5**	–	**PH100S280–5**
5.0	30.00	150	–	**PH150S48-5**	**PH150S110-5**	**PH150S280–5**
5.0	50.00	275	–	**PH300S48-5**	–	**PH300S280–5**
5.0	100.00	500	–	-	–	**PH600S280–5**
12.0	4.20	50	**PH50S24-12**	**PH50S48-12**	**PH50S110-12**	**PH50S280–12**
12.0	6.30	75	–	**PH75S48-12**	**PH75S110-12**	**PH75S280-12**
12.0	8.40	100	–	**PH100S48-12**	–	**PH100S280-12**
12.0	12.50	150	–	**PH150S48-12**	**PH150S110-12**	**PH150S280-12**
12.0	25.00	300	–	**PH300S48-12**	–	**PH300S280-12**
12.0	50.00	600	–	-	–	**PH600S280-12**
15.0	3.40	50	**PH50S24-15**	**PH50S48-15**	**PH50S110-15**	**PH50S280-15**
15.0	5.00	75	–	**PH75S48-15**	**PH75S110-15**	**PH75S280-15**
15.0	6.70	100	–	**PH100S48-15**	–	**PH100S280-15**
15.0	10.00	150	–	**PH150S48-15**	**PH150S110-15**	**PH150S280-15**
15.0	20.00	300	–	**PH300S48-15**	–	**PH300S280-2**
15.0	40.00	600	–	-	–	**PH600S280-15**
24.0	2.10	50	**PH50S24-24**	**PH50S48-24**	**PH50S110-24**	**PH50S280-24**
24.0	3.20	75	–	**PH75S48-24**	**PH75S110-24**	**PH75S280-24**
24.0	4.20	100	–	**PH100S48-24**	–	**PH100S280-24**
24.0	6.30	150	–	**PH150S48-24**	**PH150S110-24**	**PH150S280-24**
24.0	12.50	300	–	**PH300S48-24**	–	**PH300S280-24**
24.0	25.00	600	–		–	**PH600S280-24**
28.0	1.80	50	**PH50S24-28**	**PH50S48-28**	**PH50S110-28**	**PH50S280-28**
28.0	2.70	75	–	**PH75S48-28**	**PH75S110-28**	**PH75S280-28**
28.0	3.60	100	–	**PH100S48-28**	–	**PH100S280-28**
28.0	5.40	150	–	**PH150S48-28**	**PH150S110-28**	**PH150S280-28**
28.0	10.71	300	–	**PH300S48-28**	–	**PH300S280-28**
28.0	21.43	600	–	-	–	**PH600S280-28**
48.0	6.25	300	–	**PH300S48-48**	–	**PH300S280-48**
48.0	12.50	600	–	-	–	**PH600S280-48**

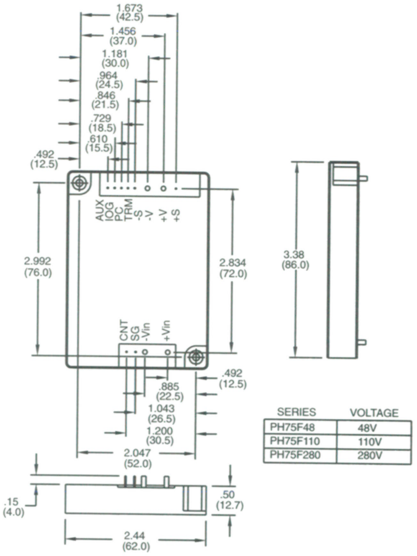
PH 50S/75S



SERIES	VOLTAGE
PH50S24	24V
PH50S48	48V
PH50S110	110V
PH50S280	280V
PH75S48	48V
PH75S110	110V
PH75S280	280V

NOTE:
1. M3 TAPPED HOLES FOR CUSTOMER CHASSIS MOUNTING 2 PLS.
2. SCREWS MUST NOT PROTRUDE INTO PWR MODULE BY MORE THAN (12.7) MM. (BACK SIDE FOR HEAT SINK).
3. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
4. WEIGHT: 100 GRAMS

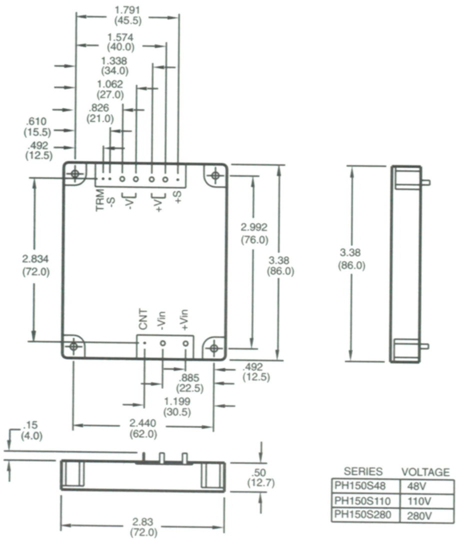
PH 75F



SERIES	VOLTAGE
PH75F48	48V
PH75F110	110V
PH75F280	280V

NOTE:
1. M3 TAPPED HOLES FOR CUSTOMER CHASSIS MOUNTING 2 PLS.
2. SCREWS MUST NOT PROTRUDE INTO PWR MODULE BY MORE THAN (12.7) MM. (BACK SIDE FOR HEAT SINK).
3. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
4. INPUT AND OUTPUT ARE 2, INPUT AND OUTPUT ARE 0.6 .
5. WEIGHT: 150 GRAMS

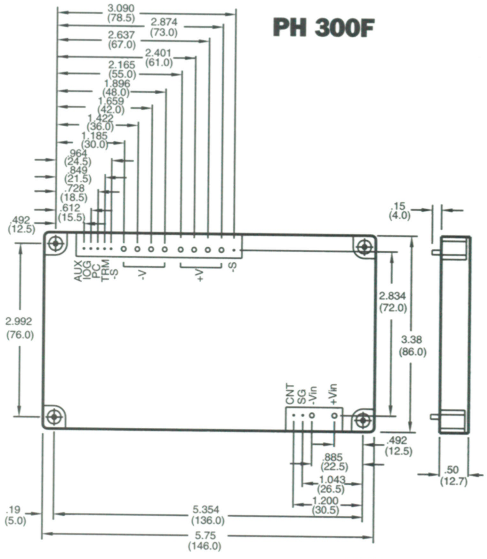
PH 150S



SERIES	VOLTAGE
PH150S48	48V
PH150S110	110V
PH150S280	280V

NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 4x M3 TAPPED HOLES FOR CUSTOMER CHASSIS MOUNTING.
3. SCREWS MUST NOT PROTRUDE INTO PWR MODULE BY MORE THAN (12.7) MM. (BACK SIDE FOR HEAT SINK).
4. WEIGHT: 150 GRAMS.

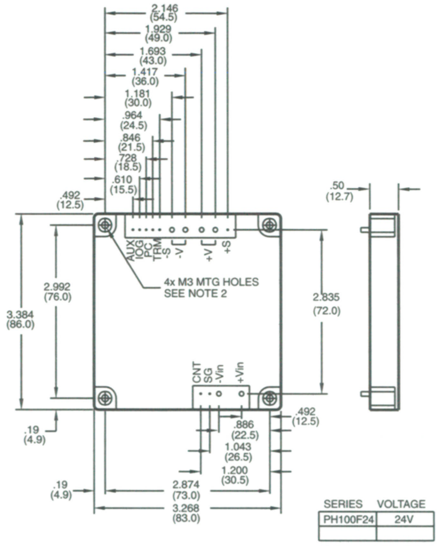
PH 300F



SERIES	VOLTAGE
PH300F48	48V
PH300F110	110V
PH300F280	280V

NOTE:
1. M3 TAPPED HOLES FOR CUSTOMER CHASSIS MOUNTING 4 PLS.
2. SCREWS MUST NOT PROTRUDE INTO PWR MODULE BY MORE THAN (12.7) MM. (BACK SIDE FOR HEAT SINK).
3. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
4. INPUT AND OUTPUT ARE 2, INPUT AND OUTPUT ARE 0.6 .
5. WEIGHT: 250 GRAMS.

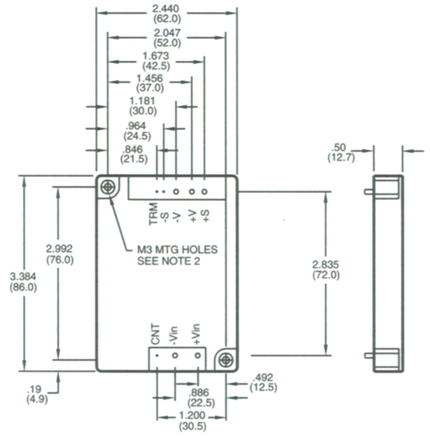
PH 100F/150F



SERIES	VOLTAGE
PH100F24	24V

NOTES:
1. DINENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 4x M3 TAPPED HOLES FOR CUSTOMER MOUNTING.
3. SCREWS MUST NOT PROTRUDE INTO P.S. BY MORE THAN 12.7
4. WEIGHT: 180 GRAMS

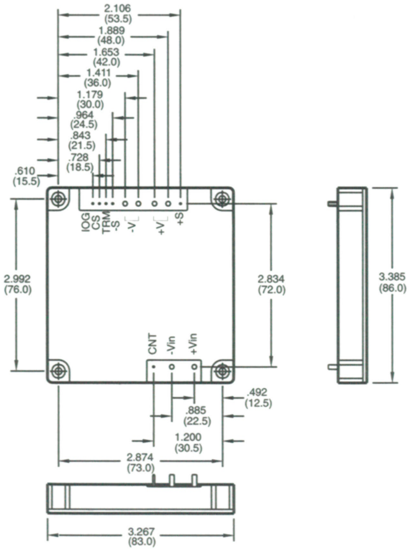
PH 100S



SERIES	VOLTAGE
PH100S48	48V
PH100S110	110V
PH100S280	280V

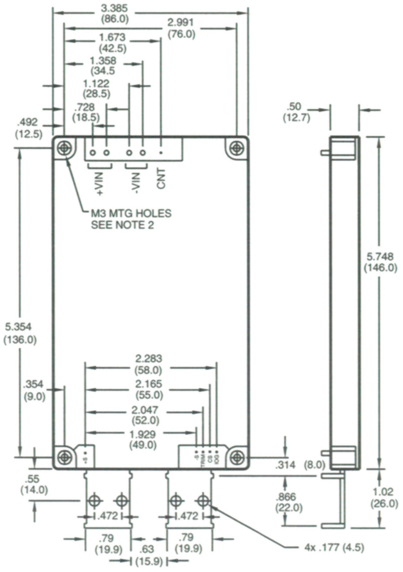
NOTES:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 2x M3 TAPPED HOLES FOR CUSTOMER MOUNTING.
3. SCREWS MUST NOT PROTRUDE INTO P.S. BY MORE THAN 12.7
4. WEIGHT: 150 GRAMS

PH 300S



NOTE:
1. M3 TAPPED HOLES FOR CUSTOMER CHASSIS MOUNTING 2 PLS.
2. SCREWS MUST NOT PROTRUDE INTO PWR MODULE BY MORE THAN (12.7) MM. (BACK SIDE FOR HEAT SINK).
3. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
4. INPUT AND OUTPUT PINS ARE (2, INPUT AND OUTPUT PINS ARE (0.6).
5. WEIGHT: 200 GRAMS.

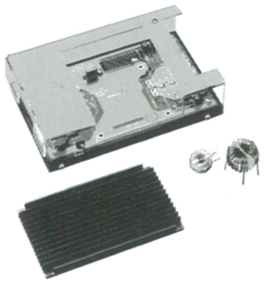
PH 600S



NOTES:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 4x M3 TAPPED HOLES FOR CUSTOMER MOUNTING,
SCREWS MUST NOT PROTRUDE INTO P.S. BY MORE THAN 12.7.
3. TERMINALS: 4x .078 (2.0), 6x TERMINALS: 4x .031 (0.8).
4. WEIGHT: 300 GRAMS.

P-Accessories

Evaluation and heatsink kits, sockets, chokes and thermal pads



PKT Series Evaluation Kits

Each Kit contains a socketed printed circuit board (including test points), heatsink kits, thermal pads, mounting hardware, line cords, an instruction manual and all the discrete components required to evaluate a power module (power module not included).

KIT NUMBER	APPLICATION MODE
PKTPFC	PF500 with PN3207 or PF1000 with PN3215
PKTPR500	PR500 with PN3215
PKT300F	PH300F
PKT150F	PH150F
PKT150S	PH150S
PKT75F/100S	PH75F/PH100S
PKT50S/75S	PH50S/PH75S

PAH Series Heatsink Kits

Heatsink Kits include a heatsink, thermal pad, mounting hardware and instruction manual (these kits are already included in the evaluation kits). Call a Lambda Application Engineer for thermal design and heatsink recommendations.

KIT NUMBER	APPLICATION MODE	°C/W @600LF/M	FIN HEIGHT (mm)	FIN DIRECTION
PAH41L12	PH50S, PH75S	1.25	12	Length
PAH62L12	PH75F, PH100S, PN3207	1.20	12	Length
PAH72L12	PH150S	0.70	12	Length
PAH83L12	PH100F, PH150F, PF500, PN3215, PR500	0.70	12	Length
PAH83L12A	PH100F, PH150F, PH300S PF500, PN3215, PR500	0.57	12	Length
PAH146L12	PH300F, PF1000, PT500, PH600S	0.65	12	Length
PAH146L12A	PH300F, PF1000, PT500, PH600S	0.40	12	Length
PAH146W12	PH300F, PF1000, PT500, PH600S	0.65	12	Width
PAH41L23	PH50S, PH75S	0.80	23	Length
PAH62L23	PH75F, PH100S, PN3207	0.60	23	Length
PAH72L23	PH150S	0.40	23	Length
PAH83L23	PH100F, PH150F, PH300S, PF500, PN3215, PR500	0.45	23	Length
PAH146L23	PH300F, PF1000, PT500, PH600S	0.30	23	Length

PATP Series Thermal Pads

The PATP Series is electrically and thermally conductive, typically yielding less than 1°C temperature rise heatsink to baseplate at full power operation.

KIT NUMBER	APPLICABLE MODULE
PATP41	PH50S, PH75S
PATP62	PH75F, PH100S, PN3207
PATP72	PH150S
PATP83	PH150F, PF500, PN3215
PATP146	PH300F, PF1000, PT500

PAL Series Chokes

Input common-mode chokes for use with PH modules are available from stock. Check the application notes for recommendations.

KIT NUMBER	VALUE	APPLICABLE MODULE
PAL03-1	3A 100mH	PH50/75X48-XX
PAL05-1	5A 100 mH	PH100/150X48-XX
PAL10-1	10A 100mH	PH300F48-XX
PAL02-2	2A 200mH	PHXXXX280-XX

PAS Series Sockets

Individual sockets for P Series converters are available for each pin size, high and low current. These sockets are ideal for engineering development allowing modules to be plugged in and out without soldering/desoldering.

KIT NUMBER	DESCRIPTION	PIN SIZE
PASHC	High Current Socket (Input/Output)	2.0mm
PASLC	Low Current Socket (Signal)	0.6mm

P Series

Front end modules

PFC Modules

Rectifier Modules

DC-DC Transformer Modules

EMI Filter Modules

PF Series Power Factor Correction. These 90% efficient 500W and 1000W PFC modules are IEC/EN555-2 compliant, ensuring worldwide operation. They have integral diagnostics, auxiliary supply and control circuitry with densities to 90W/in3.

PT Series DC-DC Transformers. The PT-500 provides over 90W/in3 with 93% efficiency, for a unique solution to distributed power front-ends. In addition, they allow integral UPS functions to be built directly into the power system (use with PF module as input only).

PR Series Rectifier Module. Designed for off-line switching applications, the PR500 rectifier provides 85-132 and 170-265VAC input with integral in-rush limiting, auxiliary supply, AC fail and in-rush control circuitry.

PN and PBP Series EMI Filters. Lambda's high attenuation, low leakage EMI filters are available from 1A to 15A for 110-240VAC operation. Their low 0.5" profile makes them ideal in either board or chassis mount applications for worldwide EMI compliance.

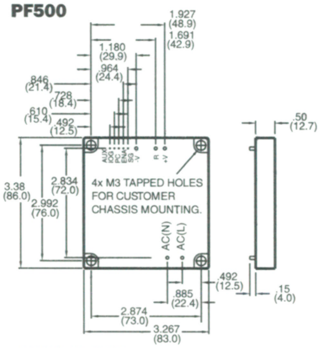
Similar products		Page
PD600	Complete Front End Module	64
MF/MBX	EMI Filters	102

DC Input	PF Modules – 85-265VAC, 47-63Hz. PR Modules – 85-132 or 170-265VAC Manual. Selectable, 47-63Hz. PT Modules – 360VDC from PF modules.
Efficiency	90 to 95%.
Power Factor Correction	95% minimum at full load on PF modules which are IEC555-2 and EN60555-2 compliant.
AC Power Fail	AFC terminal is provided on PR modules for AC fail detection.
Output Voltage Adj Range	PF Modules: 360VDC ±2% fixed. PR Modules: 280VDC unregulated PT500-48: 48VDC nominal. PT500-65: 65VDC nominal.
Line Regulation	5V typical on PF modules with constant load. Not applicable on PT modules. Regulated input required from PF.
Load Regulation	10V typical with constant input line on PF modules. 10V on PT modules.
Ripple and Noise	Dependent on output capacitor.
Parallel Operation	PF modules have single star point connection of PC terminal which enables modules to share. PT modules are also capable of N+1 operation using forced regulation current sharing.
Overcurrent Protection	PF modules shut down the inverter in the event of overcurrent condition. PT modules limit the current to 105-150% of current rating.
Overvoltage Protection	115%-130% on PT modules. 390-400VDC on PF modules. Inverter shutdown protects against excessive temperatures. Input power must be recycled to restore operation.
Cooling	Conduction cooled.
Operating Temperature Range	-20°C to +85°C with no derating.
Storage Temperature	-40°C to +85°C.
Temperature Coefficient	0.02%/°C (-10°C to +60°C).
Isolation	Input to Output: 3000VAC (PN, PR & PF modules are not isolated). Input to Baseplate: 2500VAC 100MΩ Output to baseplate:100MΩ at +500VDC 70% RH.
Output Good Signal	PR and PF modules have an ENA terminal to control the DC-DC converters (PH, PT Series) during start-up, thereby guaranteeing proper start-up when power is applied.
Inverter Good Signal	PF and PT modules provide an inverter good status at the IOG terminal when the module is healthy.
Overtemperature Protection	Inverter shutdown on PF modules protects against excessive temperatures. Input power must be recycled to restore operation.
External Components	Application notes are available to guide the selection of the external components.
Safety Agency Approval	All models are UL 1950 recognized, CSA234 certified and EN60950 approved.
Warranty	2 years.

MODEL	VOLTAGE (VDC)	POWER (W)	INPUT VOLTAGE
PF1000A-360	360 360	1008 1512	85-265VAC 170-265VAC
PF500A0360	360 360	504 756	85-265VAC 170-265VAC
PT500-48	48	500	360VDC
PT500-66	66	500	360VDC
PR500-280	280 80	500 750	85-265VAC 170-265VAC

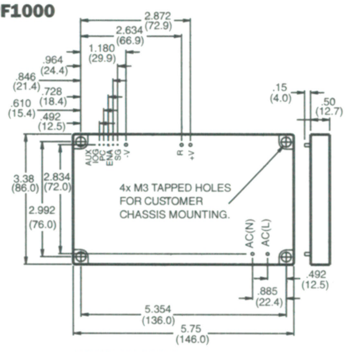
Note. Now the PR500 Rectifier is designed for off-line switching applications, providing 85-132 and 170-265VAC input with integral in-rush limiting, Auxiliary supply, AC fail and in-rush control circuitry.

PF500



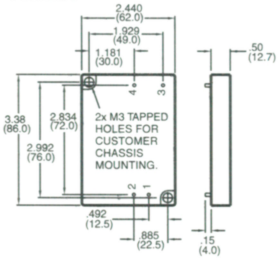
WEIGHT: 130 GRAMS.

PF1000



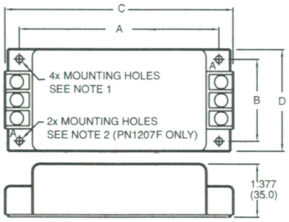
WEIGHT: 200 GRAMS

PN3207



WEIGHT: 100 GRAMS.

PN1200F/PN1210F/PN1215F


C
A
4x MOUNTING HOLES SEE NOTE 1
2x MOUNTING HOLES SEE NOTE 2 (PN1207F ONLY)
A
A
B
D
1.377 (35.0)

DIMENSIONS:

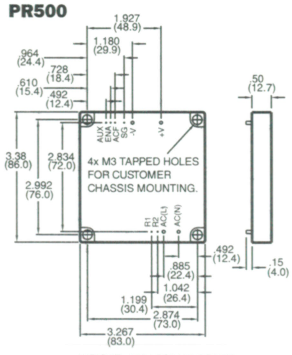
MODEL	A	B	C	D
PN1207F	5.196 (132.0)	1.732 (44.0)	5.944 (151.0)	2.047 (52.0)
PN1210F	5.196 (132.0)	2.125 (54.0)	5.944 (151.0)	2.637 (67.0)
PN1215F	5.984 (152.0)	3.228 (82.0)	6.732 (171.0)	3.740 (95.0)

NOTE:

1. 4x .188 (4.8) HOLES FOR CUSTOMER CHASSIS MOUNTING.
2. 2x .188 (4.8) HOLES, MARKED 'A' FOR CUSTOMER CHASSIS MOUNTING.

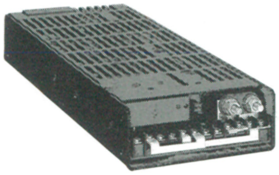
NOTE: DIMENSIONS ARE IN INCHES
EXCEPT DIMENSIONS ( ) ARE IN MM.

PR500



WEIGHT: .309 LBS/ 140 GRAMS

WD305 BABT approved 300W multiple



BABT Approved

EMI Conducted and Radiated to Level B

Psophometric Noise Less than 2mVrms

100 KHZ Low Profile Design

5 Fully Regulated Outputs

Input Reverse Voltage Protection

80% Typical Efficiency

Lamda's ultra-compact WD305 multiple output 300 watt power supply helps you create high density computer-based telecommunication systems. The WD305 unit has worldwide safety agency approvals of BABT, IEC950, UL1950 and CSA950 and EMI compliance to FCC, VDE0871 class B conducted and radiated. They offer several options which simplify and shorten the design process, including output power good signal, remote on/off, current sharing on the main output, built in thermal protection, and more.

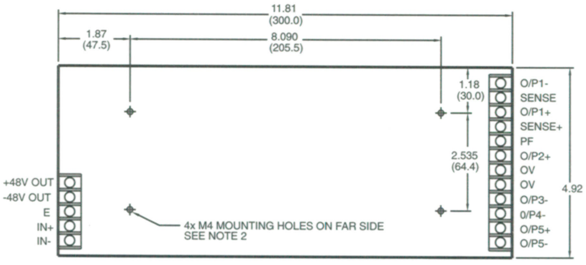
Lambda's WD305 units have the lowest profile (1.77") power supply and the smallest footprint of any 300 W multiple output on the market today. They are the ideal solution for communications and computer peripheral applications.

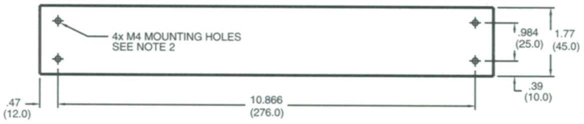
Similar products		**Page**
SV/UltraFlex	AC Input	44, 50
RP	AC Input High Power	54
UltraFlex	Non-Standard Outputs	92
UltraFlex	Higher Power DC Input	92

DC Input	48VDC (40 - 63V)
Efficiency	80% typical
Inrush Current Limiting	The turn-on in-rush current will not exceed 20 amps peak.
EMI	Conducted EMI conforms to VDE 0871, level B 10kHz-30MHz. FCC Part 15 Subpart J Class B. EN55022 and BS6527 Level B VDE 0871, Level B 10kHzl1000MHz. Radiated EMI conforms to VDE 0871, Level B 10kHz-1000MHz.
DC Output	Voltage range shown in table.
Output Power	300 watts max (1m/sec air flow or integral fan option required), 200 watts max on convection cooled models.
Line Regulation	±0.2% on main and auxiliary outputs for ±1% on main output; 2% for load changes from 20-100% an auxiliary required on main output of WD300.
Load Regulation	±1% on main output; 2% for load changes from 20-100% an auxiliary outputs. Minimum load of 5A required on main output.
Ripple and Noise	50mv pk-pk on main outpt; 1% pk-pk on auxiliary outputs. 10Hz-30MHz bandwidth.
Hold-up Time	≥500 usec,input nom Vac.
Overvoltage Protection	Overvoltage protection is provided on the main 5 volt output only.
Overload Protection	A automatic electronic current limiting circuit, limits the output current to a preset value, thereby providing protection for the load as well as the power supply.
Cooling	The WD305 is convection cooled and is available with an optional fan.
Operating Temperature Range	0 to + 70° with linear derating from + 50 to + 70C. Derate to 50% power at + 70°C.
Temperature Coefficient	0.02% /°C on main output. 0.95% /°C on auxiliary outputs.
Isolation	Type tested 1 minute without breakdown, "Y" capacitors removed. Input to ground & input to output: 4KV RMS 50Hz. Output common to ground: 700 VDC. production tests on complete units, 1 minute without breakdown. Input to grounded outputs: 1.6KV RMS 50Hz. Outputs to ground: 700VDC. Input to output resistance: > 100M Ω at 500VDC.
Remote Sensing	Available on main output for voltage drops of 0.5V max.
Safety Agency Approval	BS6301, BS7002, IEC950, UL950, EN60950, CSA234 Level 6, VDE0805.
Options	Output power good,low battery alarm, overtemperature cutout, remote on/off, integral fan, and current share (main output only).
Warranty	1 year.

POWER(W)	OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4	OUTPUT 5	MODEL
300*	+5V@50A	+12V@10A	-12V@4A	-5.2V@4A	+24V@4A	**WD305 00 00 02**
(200)**	+5V@40A	–	–	–	–	

*A 1m/sec airflow or internal fan option is required for continuous operation at 300W.
** ( ) convention cooled.





NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 8x M4 TAPPED HOLES FOR CUSTOMER MOUNTING,
SCREWS MUST NOT PROTRUDE INTO P.S. BY MORE THAN .137 (3.5) MAX.
3. WEIGHT: 6.4 LBS WITH FAN.
5.5 LBS WITHOUT FAN.

UltraFlex Series 48VDC-input modular power supplies

Customized Power Supplies Available in 1 Week

Compact Packages

Fully Regulated & Independent Outputs

Universal AC Input or 48VDC Input

Power Factor & Harmonic Correction

System Interface & Monitoring Signals

International Safety Agency Approvals

Meets Worldwide EMI Requirements

Input Transient Protection

Fixed Frequency Converters

Remote Sense

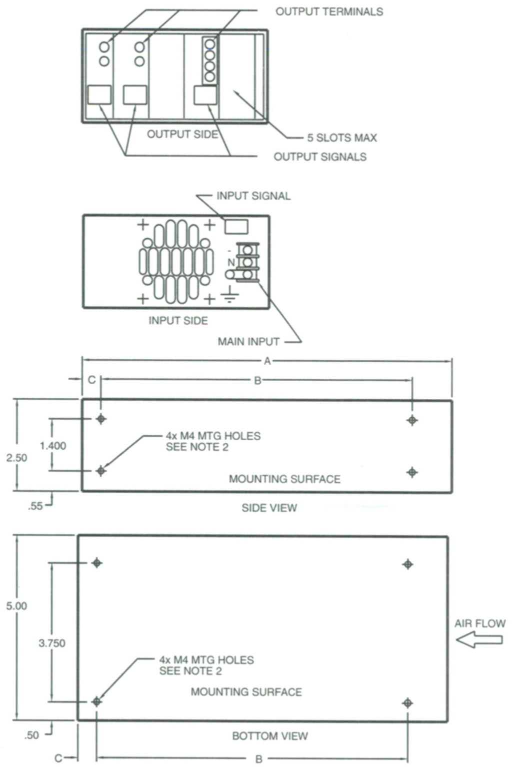
There's no need to panic just because you need a power supply that doesn't seem to be available from stock. In just one week or less, Lambda will ship a prototype 400W or 600W supply with any output voltages and signals you need. The UltraFlex Series provides high performance and high power density, with either a power factor corrected AC input or a 48VDC input.

With leading edge and proprietary circuit design, 280 KHz fixed frequency converters, synchronized circuits, planar magnetics, advanced thermal management and surface mount technology, these power supplies offer state-of-the-art power densities, exceptional flexibility, reliability, and outstanding performance.

Lambda's UltraFlex Series gives you the flexibility you need to cope with today's fast paced new product development cycles and relentless time-to-market schedules.

Similar products		**Page**
UltraFlex	AC Input	50
PFD	Higher Power	94
WD	Low Power, Fixed Outputs	90

DC Input	36-75VDC on Case C.
Efficiency	75% typical at nominal line voltage.
Inrush Current Limiting	Less than 40amps peak.
EMI	Conducted EMI conforms to EN55022, Level B, and FCC Docket 20780 Part 15, Subpart J, Class B.
Output Voltage Adj Range	±10% of nominal output voltage on all.
Line Regulation	Less than 0.1% for line variations from 85-265VAC. Less than 0.2% for dual output modules.
Load Regulation	Less than 0.4% for load variations from no load to full load and full load to no load. Less than 0.8% for dual output modules.
Cross Regulation	Less than 0.1% between single output modules. Less than 3% between dual outputs with 25% load change on high current output.
Ripple and Noise	For outputs 12V or less, 50mV pk to pk or 15mV RMS. For outputs greater than 12V, 1% pk to pk or .33% V RMS. For dual outputs, 1% pk to pk or .33% V RMS 20mHz bandwidth.
Preload	External preload is not required on single output modules. Dual output modules require 1A minimum load on the highest current output (Output #1).
Hold-up Time	The output voltage will remain within regulation limits for 20msec at full load with nominal 115/230VAC line input.
Overvoltage Protection	Internal circuitry will shut down the individual output module. Reset the OVP by recycling the input power.
Overload Protection	Overcurrent protection on single output modules limits the current. Upon removal of the overload condition, normal operation resumes automatically.
Cooling	Cooling is provided via an internal DC operated ball-bearing fan.
Operating Temperature Range	Full operation from 0° to +50°C with 100% rated power on most models. Derate linearly from +50°C to 50% power at +65°C.
Storage Temperature	-40°C to +85°C.
Temperature Coefficient	0.02%/ °C.
Isolation	Conforms to safety agency requirements.
Remote Sensing	Remote sense compensates for total cable drop of up to 0.5VDC. Available on all outputs.
Thermal Protection	The power supply will shut down in the event of an overtemperature condition (the fan will continue to operate). To restore operation, the supply must cool down and the AC input must be recycled.
Mounting	Two mounting surfaces on all models.
Military Specifications	SHOCK – MIL-STD-810E, Method 516.4,Procedure 1. VIBRATION – MIL-STD-810E, Method 514.4,Category I, TP1.
Safety Agency	UL 1950, CSA 22.2 No.220 and/or 234 Bulletin 1902A, EN 60950, EN 41003 & BS 7002, CE (Low Voltage Directive).
Warranty	3 years.



DIMENSIONS:

MODEL	A	B	C
UC	12.0	8.400	.50

APPROX. WEIGHT:

MODEL	NET LBS	SHIP LBS
UC	6.5	8.5

(WEIGHT DEPENDENT ON MODULE CONFIG.)

NOTE:

1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.
2. 8x M4 TAPPED HOLES FOR CUSTOMER MTG. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN .25 (6.3).
3. CUSTOMER MUST PROVIDE CLEARANCE AROUND VENT HOLES TO ALLOW FOR AIR FLOW.

NOTE: See Page 43 for model configurator.

PFD Series 48VDC-input power supplies

ETSI and Bellcore Compliant

36 to 75VDC Input Range

Common Package for AC or DC Input

Meets Worldwide Agency Requirements

Low Profile

Remote On/Off

Input and Output DC Good Signals

3.3V Outputs

Output Surge Current Capability

Remote Sensing

Lambda's PFD Series is designed specifically for telecommunications equipment. They provide multiple output configurations with the industry's widest operating input range (36-75VDC), ensuring worldwide operation through worst case input power sags and surges.

The PFD Series is designed with standard features such as current sharing, fan fail detection and input/output signals to provide enhanced system flexibility, reliability and fault tolerant operation. Lambda's PFD Series is available in 750W and 1000W packages with a variety of output combinations.

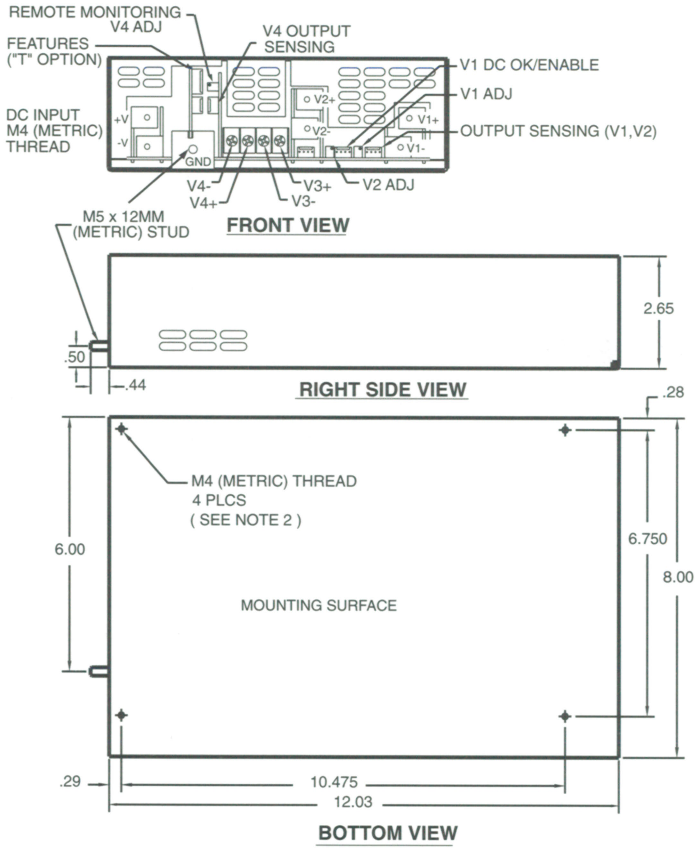
The PFD Series is also available in an AC input version in the same package size, which gives system designers the ability to design a single mechanical platform for applications requiring both AC and DC input power.

Similar products		Page
RP	AC Input	54
PH/PM	DC-DC Converters	82, 76
UltraFlex	Lower Power, Modular	92
WD305	Lower Power	90

DC Input	36-75VDC.
Efficiency	75% typical.
Input Surge Protection	IEC1000/IEC801-4 (Level 5), -5 (Level 3). EN61000-4 (-2,-3,-4,-5,-6). IEC1000-4 (-2,-3,-4,-5,-6). IEC801- (-2,-3,-4,-5,-6).
Reverse Input Protection	All models are protected against damage from reverse voltage.
Inrush Current Limiting	PFD075X – 80A. PFD100X – 80A. Meets ETS300 386-1 (ETSI).
Surge Current Capability	Output 2 can provide a surge current capability equal to three times the rated output current for up to one second, then derating exponentially to steady state value after 10 seconds. The maximum total output power must not be exceeded.
EMI	Conducted and radiated EMI conforms to EN55022, Curve A; FCC Docket 20870 Part 15 Subpart B, Class A; ETS300 386-1 Par 7.2; Bellcore TR-NWT-001089.
DC Output Controls	A single turn potentiometer is provided for adjustment over the entire voltage range.
Remote Programming Voltage	Volt per volt on outputs 1, 2 and 4. Output 3 tracks output 2.
Line Regulation	1.0% for line variations from 36 to 75VDC.
Load Regulation	1.0% for load variations from 10% load to full load and from full load to 10% load on output 1. 5.0% for outputs 2, 3 and 4. 10% pre-load required on output 2 for regulation of all outputs.
Ripple and Noise	1.0% of Vout pk-pk.
Redundant Operation	Redundant operation achieved through external diodes on all outputs.
Overcurrent Protection	Internal circuitry limits all output currents to a safe preset level in the event of an overload or short circuit condition. Upon removal of short or overload condition, normal operation resumes automatically.
Cooling	All models are forced air cooled via integral fans.
Operating Temperature Range	0°C to +50°C continuous operation. Derate output power linearly from 50% up to 70°C operation.
Storage Temperature	-40°C to +85°C.
Temperature Coefficient	0.03% per °C.
Isolation	Input to Output – 1500VDC. Input to Chassis – 1000VDC. Output to Chassis – 500VDC.
Output Good Signal	Conductance signal from uncommitted opto coupler indicates DC output 1 is within 90% of Vo nominal.
Input Good Signal	Conductance signal from uncommitted opto coupler indicates DC input is above 40.8VDC.
Fan Good Signal	Conductance signal from uncommitted opto coupler indicates fan operation.
Remote On/Off	Contact closure from remote terminal to -S on output 1 shuts down all outputs of the power supply. Open contact or TTL high signal on remote terminal enables unit.
Remote Sensing	Internal sensing allows for remote sensing on outputs 1 and 4(5V Option B). Remote sensing allows for 0.75V line drop on +V and 0.25V line drop on -V.
Resistive Programming	1000 ohms per volt on outputs 1, 2 and 4. Output 3 tracks output 2.
Thermal Protection	Internal circuitry protects the power supply against fan failure or excessive ambient temperature.
Safety Agency Approval	UL1950, VDE/EN60950, CSA234M90 and CE Mark (LUD).
Options	Options — Description N — VME Option. T — Fully featured Option.
Warranty	1 year.

POWER(W)	OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4	MODEL
Full Featured Quad Outputs					
750	+3.3V@120A	+12V@18A	-12V@7A	+5V@20A	**PFD0753-4BH-T**
750	+3.3V@120A	+12V@18A	-12V@7A	+12V@10A	**PFD0753-4CH-T**
750	+3.3V@120A	+12V@18A	-12V@7A	+24V@5A	**PFD0753-4DH-T**
750	+3.3V@120A	+12V@18A	-12V@7A	+48V@3A	**PFD0753-4EH-T**
750	+5V@120A	+12V@18A	-12V@7A	+5V@20A	**PFD0755-4BH-T**
750	+5V@120A	+12V@18A	-12V@7A	+12V@10A	**PFD0755-4CH-T**
750	+5V@120A	+12V@18A	-12V@7A	+24V@5A	**PFD0755-4DH-T**
750	+5V@120A	+12V@18A	-12V@7A	+48V@3A	**PFD0755-4EH-T**
1000	+3.3V@160A	+12V@24A	-12V@10A	+5V@20A	**PFD1003-4BH-T**
1000	+3.3V@160A	+12V@24A	-12V@10A	+12V@12A	**PFD1003-4CH-T**
1000	+3.3V@160A	+12V@24A	-12V@10A	+24V@6A	**PFD1003-4DH-T**
1000	+3.3V@160A	+12V@24A	-12V@10A	+48V@3A	**PFD1003-4EH-T**
1000	+5V@160A	+12V@24A	-12V@10A	+5V@20A	**PFD1005-4BH-T**
1000	+5V@160A	+12V@24A	-12V@10A	+12V@12A	**PFD1005-4CH-T**
1000	+5V@160A	+12V@24A	-12V@10A	+24V@6A	**PFD1005-4DH-T**
1000	+5V@160A	+12V@24A	-12V@10A	+48V@3A	**PFD1005-4EH-T**
Standard Quad Outputs					
750	+3.3V@120A	+12V@18A	-12V@7A	+5V@20A	**PFD0753-4BH-Z**
750	+3.3V@120A	+12V@18A	-12V@7A	+12V@10A	**PFD0753-4CH-Z**
750	+3.3V@120A	+12V@18A	-12V@7A	+24V@5A	**PFD0753-4DH-Z**
750	+3.3V@120A	+12V@18A	-12V@7A	+48V@3A	**PFD0753-4EH-Z**
750	+5V@120A	+12V@18A	-12V@7A	+5V@20A	**PFD0755-4BH-Z**
750	+5V@120A	+12V@18A	-12V@7A	+12V@10A	**PFD0755-4CH-Z**
750	+5V@120A	+12V@18A	-12V@7A	+24V@5A	**PFD0755-4DH-Z**
750	+5V@120A	+12V@18A	-12V@7A	+48V@3A	**PFD0755-4EH-Z**
1000	+3.3V@160A	+12V@24A	-12V@10A	+5V@20A	**PFD1003-4BH-Z**
1000	+3.3V@160A	+12V@24A	-12V@10A	+12V@12A	**PFD1003-4CH-Z**
1000	+3.3V@160A	+12V@24A	-12V@10A	+24V@6A	**PFD1003-4DH-Z**
1000	+3.3V@160A	+12V@24A	-12V@10A	+48V@3A	**PFD1003-4EH-Z**
1000	+5V@160A	+12V@24A	-12V@10A	+5V@20A	**PFD1005-4BH-Z**
1000	+5V@160A	+12V@24A	-12V@10A	+12V@12A	**PFD1005-4CH-Z**
1000	+5V@160A	+12V@24A	-12V@10A	+24V@6A	**PFD1005-4DH-Z**
1000	+5V@160A	+12V@24A	-12V@10A	+48V@3A	**PFD1005-4EH-Z**

PFD-750/1000



NOTE:

1. CUSTOMER MUST PROVIDE ADEQUATE CLEARANCE AT FRONT, SIDE AND REAR SURFACES FOR AIR FLOW.
2. CUSTOMER UNIT MOUNTING SCREWS MUST NOT PROTRUDE INTO UNIT BY MORE THAN 1/4 INCH (6.3).
3. DIMENSIONS ARE IN INCHES EXCEPT THOSE IN BRACKETS ( ) WHICH ARE IN MILLIMETERS.

Other Products

LLS Series Laboratory power supplies

User Selectable 110/220VAC input Range

Microprocessor-Controlled Input Keypad

User-Adjustable Overvoltage and Overcurrent Controls

Digital Front Panel Voltage and Current Meters

Remote Functions

Benchtop or 19" Rack Mountable

AC Input Line Cord

3 Year Warranty

Constant Current & Voltage

Mode Operation

Auto Crossover From Voltage To Current Modes

Lambda's LLS Series Lab Line offers the broadest range of single output, zero-up, stand-alone programmable power supplies available today. They provide the ideal solution for a wide range of laboratory systems and industrial applications.

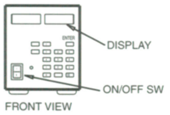
The LLS Series provides the flexibility required for today's ATE and system needs. The digitally controlled front panel is easy to use, and provides precise control of the power supply.

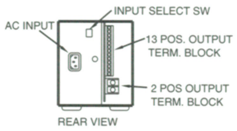
The LLS Series has models up to 300V, up to 100A, and up to 800W. All models are backed by Lambda's 3 Year Warranty and are available for immediate delivery from stock.

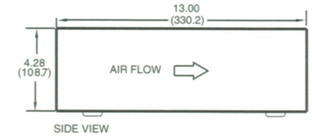
Similar products		Page
LMS	Chassis/Rack Mount	40

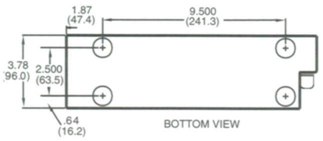
AC Input	85-132VAC or 170-265VAC, user selectable, 47-63Hz.
AC Power Control	On-Off switch on front panel.
Inrush Current Limiting	Limits in-rush current at turn-on to 20A when connected for 110VAC input and 40A when connected for 220VAC input.
DC Output	5% to full load current.
DC Output Controls	Output voltage and output current adjust is via a front panel key pad.
Line Regulation	0.05% for line variations from 85 to 132VAC or 170 to 265VAC.
Line Regulation (Current)	0.3% of Io (max) for line variations from 85 to 132VAC or 170 to 265VAC.
Load Regulation	0.05% for load variations from 0 to full load.
Load Regulation (Current)	0.3% of Io (max) for load variations from short circuit to rated DC voltage. 2.5mA on LLS-5300.
Ripple and Noise	5mV RMS, 35mV pk-pk on 8V and 18V models. 10mV RMS, 75mV pk-pk on 40V and 60V models. 20mV RMS, 150mV pk-pk on 120V and LLS-6300 and LLS-9300 models. 35mV RMS, 300mV pk-pk on the LLS-5300.
Overvoltage Protection	Adjustable overvoltage protection removes the inverter drive in the event of an OV condition. AC power must be recycled in order to restore operation.
Overload Protection	Adjustable, automatic self-resetting electronic current-limiting is included.
Cooling	The LLS-5000 Series is convection cooled. The LLS-6000, LLS-8000 and LLS-9000 Series are fan cooled. (Leave adequate clearance at all air intakes and exhausts).
Operating Temperature Range	Continuous duty from 0°C to +71°C with appropriate deratings from 50°C to 71°C. (0°-60°C. for 5000 Series).
Storage Temperature	-55°C to +85°C.
Temperature Coefficient	0.03% /°C.
Led Status Indicator	CV/CC indicator,overvoltage/overtemperature indicator and standby LED indicators on the front panel.
Meters	Digital 3.5 digit voltage meter and 3 digit current meter on front panel.
Remote On/Off	A TTL compatible isolated source or contact closure low voltage or short enables the unit. A TTL compatible high voltage or open circuit turns the unit off.
Remote Sensing	Provision is made for remote sensing to eliminate effect ot power output lead resistance on DC regulation.
Resistive Programming	Customer adjustable from 200 ohms per volt to 1000 ohms per volt. 1000 ohms per volt on the LLS-5300, LLS-6300 and LLS-9300.
Voltage Programming	Volt per volt or 0-5 volt signal using an isolated voltage source for zero to full voltage out, customer selectable.
Current Programming	0-5V isolated signal for zero to Io (max).
Thermal Protection	Internal temperature sensing circuit protects units from excessive ambient temperature on the LLS-5000 Series. The LLS-6000, 8000 and 9000 Series are protected from inadequate air velocity by an internal airflow sensing circuit. A front panel LED indicator will light upon shutdown. AC power must be recycled.
Input and Output Connections	Input is via an IEC power line connector. DC output is via heavy duty, PC board mounted barrier strips (threaded bus bars on LLS-8000, LLS-8018, LLS-9008 and LLS-9018).
Warranty	3 years.

		MAX CURRENT AMPS AT				
OUTPUT	**POWER (W)**	**40°**	**50°**	**60°**	**71°**	**MODEL**
0-8V	80	10.00	7.90	6.30	-	**LLS-5008**
	160	20.00	20.00	16.50	13.50	**LLS-6008**
	400	50.00	47.00	41.00	33.70	**LLS-8008**
	800	100.00	90.00	78.00	57.00	**LLS-9008**
0-18V	81	4.50	3.50	2.80	-	**LLS-5018**
	162	9.00	9.00	8.20	6.60	**LLS-6018**
	432	24.00	22.20	20.50	18.00	**LLS-8018**
	810	45.00	40.00	33.00	25.00	**LLS-9018**
0-40V	80	2.00	1.60	1.30	-	**LLS-5040**
	160	4.00	4.00	3.80	3.10	**LLS-6040**
	400	10.00	9.80	9.20	8.00	**LLS-8040**
	800	20.00	18.00	15.00	11.00	**LLS-9040**
0-60V	84	1.40	1.10	0.90	-	**LLS-5060**
	168	2.80	2.80	2.60	2.10	**LLS-6060**
	420	7.00	6.60	6.10	5.30	**LLS-8060**
	840	14.00	12.00	10.00	8.00	**LLS-9060**
0-120V	84	0.70	0.55	0.45	-	**LLS-5120**
	168	1.40	1.40	1.30	1.00	**LLS-6120**
	420	3.50	3.40	3.20	2.70	**LLS-8120**
	840	7.00	6.00	5.00	4.00	**LLS-9120**
0-300V	84	0.28	0.22	0.18	-	**LLS-5300**
	168	0.56	0.56	0.52	0.40	**LLS-6300**
	840	2.80	2.40	2.00	1.60	**LLS-9300**

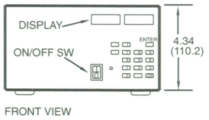


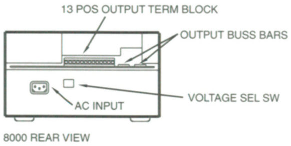


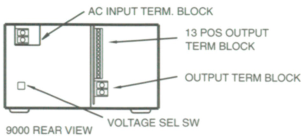


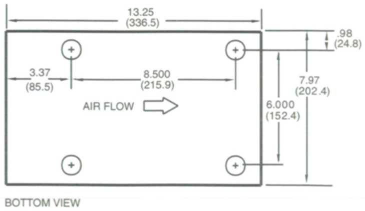


NOTE:
1. DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS ( ) ARE IN MM.









LMPS Series Rack-mounted systems

Redundant or non-redundant systems incorporating Lambda's standard power supplies

Many Standard Configurations

Power Up To 4000W

Monitoring Signals

Fault Notification

Power Factor Correction

Redundancy

Low MTTR

Lambda's Standard Power System and Standard Redundant Power System are ideal for test and all 19-inch mounted applications where critical power and uptime is paramount. They ensure projects can be taken from initial design through the prototype stage and into production faster, and at a lower cost than ever before.

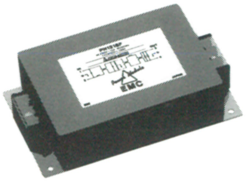
Features that were once called "custom" such as redundancy, AC and DC monitoring, parallel current sharing, simultaneous fault notifications, front panel adjustability and covers are designed in–so there's never an NRE charge.

Standard System

Power Supplies	The heart of the Standard Power System is Lambda's broad selection of proven power supply modules which have set the standard for quality and reliability in the power supply industry for over 45 years. Single and dual output power supplies are available to 2000 watts, including Lambda's JWS, JFS, LDS, LMS, LND, LNS, LRS, LZS, RWS-A, & UltraFlex Series. The broad range provides finished systems with thousands of possible output combinations.
AC Input	85-132VAC or 170-265VAC input available.
Output Voltages	Wide range zero-up and/or nominal voltage adjustablity depending on the power supplies selected.
Outputs	Up to 8 outputs per Standard Power System
Power	Up to 4000 watts of total power per assembly.
Power Factor Correction	Available with power factor correction.
Front Panel	The front panel features: 3 digit LED for output voltage and current. Output voltage adjustment pots. Audible fault alarm & fault LED's. Power supply ID by catalog part number, ratings and output number within the assembly.
DC Output Monitoring	DC output monitoring with user-set limits on the front panel for maximum voltage, minimum voltage, maximum current.
Fault Warnings	Fault warnings for: Output voltage outside user set window. Output current exceeds user set maximum value. AC fail early warning.
Fault Notification	Fault notification by: Open collector signal on rear panel D connector (must be reset to clear). Audible alarm for fault warning which can be disarmed on the front panel. Individual front panel fault LED's for each supply.
MTTR	Power supplies are loaded into the rack from the top without soldering providing low MTTR.
Dimensions	19"W x 5.25"H x 22"D (excluding front panel handles).
Covers	Rack adapter covers are standard.
Warranty	All assemblies are backed by Lambda's warranty of the power supplies.

Redundant System

Power Supplies	Lambda's LMPS Redundant Power system uses the ultra-reliable, high performance LZS, SE Series Power Supplies.
Output Power	Redundant output power @ 40°C is available in 1000W, 750W and 500W.
Output Voltage Range	4.75 to 5.7 VDC 1.40 to 15.0 VDC 19.00 to 28.4 VDC
AC Input Range	85-132VAC or 170-265VAC.
AC & DC Monitoring	Full functionality as detailed in Lambda's Standard Power System.
Front Panel	Front Panel The front panel of Lambda's Redundant Power System features. Power supply select & indicator Digital output displays Fault level adjust & indicators Audible fault alarm & fault LED's On/off double pole circuit breakers for each power supply Mode select & indicators
Operating Temperature Range	0°C to +71°C with suitable derating above +50°C.
Cooling	Integral DC ball bearing fan provided in each power supply.
Overvoltage, Overload and Thermal Protection	Fault notification by: Open collector signal on rear panel D connector (must be reset to clear).
Parallel Operation	Each model is capable of operating in current sharing parallel with a like unit via the P.O. rear plate terminal connection.
Remote Turn-on/Turn-off	Provision is made for digitally controlled remote turn-on/turn-off for each supply.
Parallel Operation	Each model is capable of operating in current sharing parallel with a like unit via the P.O. rear plate terminal connection.
Output Signals	AC good/fail, output good, inverter good are provided for each power supply via an isolated TTL compatible signal.
Dimensions	19" x 5.25"H x 22"D (excluding front panel handles).
DC Output Metering and Fault Monitoring	Provided for the individual power supply outputs as well as the redundant system output.
Waranty	Five year warranty includes labor as well as parts. Warranty applies to operation at full published specifications at the end of five years.

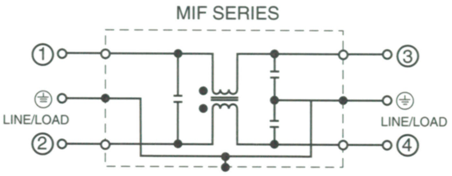


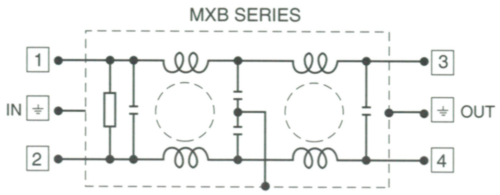
EMI Filters Ratings Table

Terminal Type	DC OHMS (max)	MAX CURRENT (AMPS) AT				MODEL
		45°	55°	65	75°	
IEC/Spade	0.80	1.0	1.0	0.9	0.6	**MIF-1201-33**
IEC/Spade	0.28	2.0	2.0	1.7	1.2	**MIF-1202-33**
IEC/Spade	0.13	3.0	3.0	2.6	1.8	**MIF-1203-33**
IEC/Spade	0.04	6.0	6.0	4.3	3.0	**MIF-1206-33**
Barrier Strip	0.30	6.0	5.4	4.5	3.3	**MXB-1206-33**
Barrier Strip	0.10	10.0	9.0	7.5	5.5	**MXB-1210-33**
Barrier Strip	0.02	20.0	17.0	14.0	10.0	**MXB-1220-33**
Barrier Strip	0.01	30.0	22.0	22.5	16.5	**MXB-1230-33**
Lug	0.02	30.0	30.0	25.5	18.0	**MXB-1330-33**

Notes:
1. All models meet safety agency approvals per UL, CSA and VDE except the MBS-1330 which meets UL and CSA only.
2. Maximum Voltage Rating: 250VAC, 250VDC
3. Leakage: 1.0mA @250V, 0.5mA @ 125V
4. Insulation: R min = 100 Mohm

EMI Filters Schematics & Attenuation Curves





Rack Hardware

Chassis Slides

For Use With Rack Adapter or Full Power Instrument	MODEL
LRA-14, LRA-15	**KHT-34-012**
LRA-17	**KHT-44-013**
LR-18	**KHT-20-015**

Note: To order rack adapter of full rack power supplies with chassis slides, add suffix CS to model number (Example: LRA-17-CS) and add price of chassis slides.

Blank Font Panels

FOR USE WITH RACK ADAPTER	PANEL WIDTH	COLOR CODE	MODEL
LRA-20	1/4 RACK	(B)	**LPB-12**
LRA-20	1/2RACK	(B)	**LPB-14**
LRA-14	FULL RACK	(A)	**SB-30**
LRA-15,17	FULL RACK	(A)	**SB-50**

Color Code Key LK models
(A) Dark Brown
(B) Off White (matches LLS models)

Rack Adapters

Dimensions (HxWxD) In Inches	For Use With Packages	MODEL
3 1/2 x19 x 14	For Standard Catalog Power Supplies	**LRA-14**
5 3/16 x 19 x 14	For Standard Catalog Power Supplies	**LRA-15**
5 3/16 x 19 x 21	For Standard Catalog Power Supplies	**LRA-17**
5 3/16 x 19 x 21	For Standard Catalog Power Supplies	**LRA-18**
5 3/16 x 19 x 16 1/2	LLS Series	**LRA-20**

NOTE: (1) The LRA-18 is designed only for LF and LS series supplies.

General Ordering Information

Cage Code
029V8

Order Placement
For order placement, call Lambda Customer Service at 1-800-LAMBDA-4, or fax your order to 516-293-0519.

Prices
Consult the current Published Price List or contact the Lambda Customer Service department for price information. All prices are F.O.B. Origin, unless otherwise specifically noted and are subject to all applicable taxes.

Terms
Net 30 days. Lambda accepts major credit cards. All order placement is subject to credit approval.

Minimum Order
$100.00 minimum order.

Shipment
Unless otherwise specified, orders will be shipped via standard surface transportation. Urgent requirements can be accommodated by air express or airfreight in accordance with your instructions. If equipment is received damaged, it is the customer's responsibility to contact the carrier and file a claim for damages. For special packaging or marking consult factory.

Quotations
All written quotations are valid for 30 days from the date on which they are made.

Certificate of Compliance
A standard Lambda Certificate of Compliance is available at no additional charge, upon request at time of order placement. There will be a charge of $225 per line item for a Certificate of Compliance on a customer's format.

Source Inspection
5%($800 minimum) per shipment for standard in-plant shipments. Add $125 each destination for shipments requiring DOD 250 forms.Rates per model for source inspection of repairs (per model)

1-4	$400 Lot
5-9	$525 Lot
10-19	$675 Lot
20 Special Quotation	

Note: Applicable for all repaired products irrespective of warranty.

Recorded Test Data
4%($250 minimum) per shipment for products from stock. Rates for recorded test data supplied with repairs (per model).

1-4	$250
5-9	$300
10-19	$450
20+	Special Quotation

Note: Recorded test data is only available on Lambda Products with a warranty period equal to, or greater than 3 years.

Returned Goods Ordered in Error
For standard 1998 Catalog power supplies that are ordered incorrectly up to 10 piece quantities, an exchange may be authorized for the proper unit by contacting the factory for a return authorization number. For power supplies ordered in error in quantities greater than 10 pieces; exchanges are at Lambda's discretion, please contact Lambda Customer Service. Restocking charges of 25% or $25.00, whichever is greater, are applicable to all returns.

All returned equipment must be new, unused, in the original carton, and in the customer's possession no more than 30 days. Shipments must be prepaid, contain return authorization number and reason for return plus instructions for return shipment, and be packed in a manner to preclude shipping damage. Any shipping damage will be the responsibility of the customer.

Assemblies, accessories, power supplies with built-in options, non-standard or obsolete power supplies or any material modified or built to customer specifications cannot be accepted back for credit or exchange.

Cancellation and Rescheduling
Lambda will allow standard product to be rescheduled provided written notice is received 30 days prior to the original ship date. Lambda will allow a one time rescheduling request, for a maximum of 90 days from original ship date. No cancellations accepted within product lead time or on non-standard products.

Warranty

Lambda warrants that for the warranty period indicated in Lambda's catalog, the Products sold hereunder shall be free from defects in material and workmanship and will perform within applicable specifications. The sole obligation of Lambda under this warranty shall be to repair or replace, at Lambda's option, non-conforming Products returned to Lambda. Such liability, if any, of Lambda, shall be contingent upon notification to Lambda of the nonconformity of the Products within 5 days of discovery of the same. The foregoing warranty is in lieu of any other express or implied warranty, including any implied warranty of merchantability or of fitness for a particular purpose, and of any other obligation on the part of Lambda. Lambda does not warrant that any of the products can be used for any particular purpose. The foregoing warranty shall not apply to any Product that has been modified or repaired by Purchaser or by any third party. Lambda shall, in its sole discretion, determine whether Products have been so modified or repaired.

Liability

Lambda shall have no liability in any event, including negligence for indirect, incidental or consequential damages, including for anticipated or lost profits, or loss of time or other losses incurred by purchaser or any third party whether or not Lambda was aware of the possibility thereof.

Warranty Repair Procedure

Power supplies that are covered under Lambda's warranty and are in need of repair require a return material authorization number prior to shipment to factory. Lambda shall pay freight costs for returning to Purchaser repaired or replaced Products determined by Lambda to be within the provisions of the above warranty. In all other cases, cost of repair or refurbishment and freight costs shall be billed to Purchaser.

Standard Lambda failure analysis is available upon request at the time of RMA issuance, at no additional charge. Failure analysis on Customer format is subject to additional charges.

Out of Warranty Repairs

Lambda will repair out of warranty product at a cost to the customer, where deemed feasible. After the customer has authorized quoted repair charges, customer is responsible for all postage charges related to the return of out of warranty repairs.

Out of warranty repairs are available for products which are not more than four years beyond the expired warranty of the product.

Lambda does not provide failure analysis on out of warranty repairs.

Return Material Authorization Numbers

All returned goods must have a return material authorization (RMA) number marked on carton. The number should be marked on a minimum of 2 sides of the carton, 2 inches and 5 inches long minimum. To receive an RMA number contact Lambda Customer Service. All goods must be shipped prepaid.

Worldwide Lambda-staffed Sales And Service Offices

INTERNATIONAL
Lambda Electronics Inc.
Melville, New York
Tel: 1-800-LAMBDA-4
516-694-4200

CANADA
Lambda Electronics
(Canada) Inc.
Kirkland, Quebec
Tel: 1-800-361-2578
(514)-695-8330

CHINA, SHANGHAI
Shanghai Nemic-Lambda
Tel: (86)-21-485-0777

ENGLAND, ILFRACOMBE
Coutant-Lambda Ltd.
Tel: (44)-1271-8-65656

FRANCE, ROUEN
Lambda-Coutant S.A.
Tel: (33)-1-60-12-14-87

GERMANY, ACHERN
Lambda Electronics GmbH
Tel: (49)-07841-6806-0

HONG KONG
Nemic-Lambda Hong Kong
Tel: (852)-2420-6693

ISRAEL, TEL AVIV
Nemic-Lambda Ltd.
Tel: (972)-3-902-4333

ITALY, MILAN
Lambda Electronics, S.R.L.
Tel: (39)-2-660-40540

JAPAN, TOKYO
NEMIC-LAMBDA K.K.
Tel: (81)-3-3447-4411

KOREA
Phoenix Nemic-Lambda Ltd.
Tel: 82-342-718-7900

MALAYSIA, SENAI
Nemic-Lambda (M) SDN, Bhd
Tel: (60)-7-599-3901

SINGAPORE
Nemic-Lambda(S) PTE Ltd.
Tel: (65)-251-7211

TAIWAN
Nemic-Lambda Taiwan
Tel: (886)-3-426-1712

SWEDEN
Lambda Scandinavia
Tel: (46)-8-630-0695

Worldwide Representatives

AUSTRALIA, ADELAIDE
K.D. Fisher & Co. Pty. Ltd.
Tel: (61)-18-277-3288

BRAZIL, SAO PAULO
Robertshaw Do Brasil S.A.
Tel: (55)-11-261-7033

MEXICO, MONTERREY
Canadien Co
Tel: (52)-83-652-020

MEXICO, MEXICO CITY
Mexitek, S.A.
Tel: (52)-5-575-9929

Index by model number

MODEL	STATUS	REPLACED BY	PG
213XX1A	BTO: 5 PC. Min.	RP0750-3	54
213XX1L	BTO: 5 PC. Min.	PFD0750-3	94
214XX1A	BTO: 5 PC. Min.	RP0750-4	54
214XX1L	BTO: 5 PC. Min.	PFD0750-4	94
21XX01L	BTO: 5 PC. Min.	UltraFlex AC Input	50
21XX11A	BTO: 5 PC. Min.	UltraFlex AC Input	50
233XX1A	BTO: 5 PC. Min.	RP0750-3	54
233XX1L	BTO: 5 PC. Min.	PFD0750-3	94
234XX1A	BTO: 5 PC. Min.	RP0750-4	54
234XX1L	BTO: 5 PC. Min.	PFD0750-4	94
23XX01L	BTO: 5 PC. Min.	UltraFlex AC Input	50
23XX11A	BTO: 5 PC. Min.	UltraFlex AC Input	50
283XX1A	BTO: 5 PC. Min.	RP0750-3	54
283XX1L	BTO: 5 PC. Min.	PFD0750-3	94
284XX1A	BTO: 5 PC. Min.	RP0750-4	54
284XX1L	BTO: 5 PC. Min.	PFD0750-4	94
28FX01L	BTO: 5 PC. Min.	PFD1000	94
28GX11A	BTO: 5 PC. Min.	JFS/FE	66
2AXXX1G	BTO: 5 PC. Min.	SVPS/SVT/SVQ250	44
2BXXX1A	BTO: 5 PC. Min.	SV/UltraFlex	44,50
2CXXX1G	BTO: 5 PC. Min.	RP0500/UF	54
2DXXX1G	BTO: 5 PC. Min.	RP/UltraFlex	54,50
313XX1A	BTO: 5 PC. Min.	RP0750-3	54
313XX1L	BTO: 5 PC. Min.	PFD0750-3	94
313XX7B	BTO: 5 PC. Min.	RP0750-3	54
313XX7F	BTO: 5 PC. Min.	RP0750-3	54
313XX8E	BTO: 5 PC. Min.	RP0750-3	54
314XX1A	BTO: 5 PC. Min.	RP0750-4	54
314XX1L	BTO: 5 PC. Min.	PFD0750-4	94
314XX7B	BTO: 5 PC. Min.	RP0750-4	54
314XX8E	BTO: 5 PC. Min.	RP0750-4	54
315XX7B	BTO: 5 PC. Min.	RP1000-5	54
31GX01L	BTO: 5 PC. Min.	UltraFlex	50
31GX11A	BTO: 5 PC. Min.	JFS/FE	28,66
31GX18E	BTO: 5 PC. Min.	FE	66
31HX15F	BTO: 5 PC. Min.	FE	66
31HX17B	BTO: 5 PC. Min.	FE	66
31JXX6F	BTO: 5 PC. Min.	FE	66
31JXX7B	BTO: 5 PC. Min.	FE	66
333XX1A	Obsolete	RP0750-3	54
334XX1A	Obsolete	RP0750-4	54
335XX1A	Obsolete	RP0750-5	54
33FX11A	Obsolete	JFS/FE	28,66
363XX9B	BTO: 5 PC. Min.	JFS/FE(Singles Only)	28,66
364XX9B	BTO: 5 PC. Min.	JFS/FE(Singles Only)	28,66
365XX9B	BTO: 5 PC. Min.	JFS/FE(Singles Only)	28,66
36KX09D	BTO: 5 PC. Min.	JFS/FE	28,66
AD10-0505-12	Obsolete	2 x PP	74
AD10-0505-24	Obsolete	2 x PP	74
AD10-0505-48	Obsolete	2 x PP	74
AD10-0505-5	Obsolete	2 x PP	74
AD10-1205-12	Obsolete	2 x PP	74
AD10-1205-24	Obsolete	2 x PP	74
AD10-1205-48	Obsolete	2 x PP	74
AD10-1205-5	Obsolete	2 x PP	74
AD10-1212-12	Obsolete	PM10-12D12	76
AD10-1212-24	Obsolete	PM10-24D12	76
AD10-1212-48	Obsolete	PM10-48D12	76
AD10-1212-5	Obsolete	PPD6-5-1212	74
AD10-1505-12	Obsolete	2 x PP	74
AD10-1505-24	Obsolete	2 x PP	74
AD10-1505-48	Obsolete	2 x PP	74
AD10-1505-5	Obsolete	2 x PP	74
AD10-1515-12	Obsolete	PPD6-12-1515	74
AD10-1515-24	Obsolete	PM10-24D15	76
AD10-1515-48	Obsolete	PM10-48D15	76
AD10-1515-5	Obsolete	2 x PP	74
AD6-0505-12	Obsolete	2 x PP	74
AD6-0505-24	Obsolete	2 x PP	74
AD6-0505-48	Obsolete	2 x PP	74
AD6-0505-5	Obsolete	2 x PP	74
AD6-1205-12	Obsolete	2 x PP	74
AD6-1205-24	Obsolete	2 x PP	74
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AD6-1212-48	Obsolete	PPD6-48-1515	74
AD6-1212-5	Obsolete	PPD6-5-1212	74
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AD6-1505-24	Obsolete	2 x PP	74
AD6-1505-48	Obsolete	2 x PP	74
AD6-1505-5	Obsolete	2 x PP	74
AD6-1515-12	Obsolete	PM10-12D15	76
AD6-1515-24	Obsolete	PPD6-24-1515	74
AD6-1515-48	Obsolete	PPD6-48-1515	74
AD6-1515-5	Obsolete	PPD6-5-1515	74
ADC 150 24 00	Obsolete	No Replacement	
ADC 150 48 00	Obsolete	No Replacement	
AS10-12-12	Obsolete	PM10-12S12	76
AS10-12-24	Obsolete	PM10-24S12	76
AS10-12-48	Obsolete	PM10-48S12	76
AS10-12-5	Obsolete	PP6-5-12	74
AS10-15-12	Obsolete	PM10-12S15	76
AS10-15-24	Obsolete	PM10-24S15	76
AS10-15-48	Obsolete	PM10-48S15	76
AS10-15-5	Obsolete	PP6-5-15	74
AS10-24-12	Obsolete	PM10-24D12	76
AS10-24-24	Obsolete	PM10-24D12	76
AS10-24-48	Obsolete	PM10-48D24	76
AS10-24-5	Obsolete	PPD6-5-1212	74
AS10-5-12	Obsolete	PM10-12S05	76
AS10-5-24	Obsolete	PM10-24S05	76
AS10-5-48	Obsolete	PM10-48S05	76
AS10-5-5	Obsolete	PP6-5-5	74
AS2-12-12	Obsolete	PP1R5-12-12	74
AS2-12-24	Obsolete	PP1R5-24-12	74
AS2-12-48	Obsolete	PP3-5-12	74
AS2-12-5	Obsolete	PP3-5-12	74
AS2-15-12	Obsolete	PP1R5-12-15	74
AS2-15-24	Obsolete	PP1R5-24-15	74
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AS2-5-24	Obsolete	PPD1R5-5-1212	74
AS2-5-48	Obsolete	PP3-5-5	74
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AS25-12-24	Obsolete	PM30-24S12	76
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AS25-15-48	Obsolete	PM30-48S15	76
AS25-5-12	Obsolete	PM30-12S05	76
AS25-5-24	Obsolete	PM30-24S05	76
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AS6-24-12	Obsolete	PP6-12-24	74
AS6-24-24	Obsolete	PPD6-24-1212	74
AS6-24-48	Obsolete	PP6-48-24	74
AS6-24-5	Obsolete	PPD6-5-1212	74
AS6-5-12	Obsolete	PP6-12-5	74
AS6-5-24	Obsolete	PP6-24-5	74
AS6-5-48	Obsolete	PP6-48-5	74
AS6-5-5	Obsolete	PP6-5-5	74
CN160-12-110	Obsolete	PH150S110-12	82
CN160-12-280	Obsolete	PH150S280-12	82
CN160-15-110	Obsolete	PH150S110-15	82
CN160-15-280	Obsolete	PH150S280-15	82
CN160-2-110	Obsolete	PH150F110-2	82
CN160-2-280	Obsolete	PH150F280-2	82
CN160-24-110	Obsolete	PH150S110-24	82
CN160-24-280	Obsolete	PH150F280-24	82
CN160-5-110	Obsolete	PH150S110-5	82
CN160-5-280	Obsolete	PH150S280-5	82
CN25-12-110	Obsolete	PH50S110-12	82
CN25-12-280	Obsolete	PH50S280-12	82
CN25-15-110	Obsolete	PH50S110-15	82
CN25-15-280	Obsolete	PH50S280-15	82
CN25-2-110	Obsolete	Consult Factory	
CN25-2-280	Obsolete	Consult Factory	
CN25-24-110	Obsolete	PH50S110-24	82
CN25-24-280	Obsolete	PH50S280-24	82
CN25-5-110	Obsolete	PH50S110-5	82
CN25-5-280	Obsolete	PH50S280-5	82
CN50-12-110	Obsolete	PH50S110-12	82
CN50-12-280	Obsolete	PH50S280-12	82
CN50-15-110	Obsolete	PH50S110-15	82
CN50-15-280	Obsolete	PH50S280-15	82
CN50-2-110	Obsolete	Consult Factory	
CN50-2-280	Obsolete	Consult Factory	
CN50-24-110	Obsolete	PH50S110-24	82
CN50-24-280	Obsolete	PH50S280-24	82
CN50-5-110	Obsolete	PH50S110-5	82
CN50-5-280	Obsolete	PH50S280-5	82
DCM-300	Obsolete	Consult Factory	
DRP60-1	Current Model		32
DRP120-1	Current Model		32
DRP240-1	Current Model		32
DRP240-3H	Current Model		32
DRP480-3H	Current Model		32
DSR180-12-24	Obsolete	Consult Factory	
DSR180-24-24	Obsolete	Consult Factory	
DSR180-48-24	Obsolete	Consult Factory	
DSR180-5-24	Obsolete	Consult Factory	
DSR30-12-24	Obsolete	Consult Factory	
DSR30-12-48	Obsolete	Consult Factory	
DSR30-15-24	Obsolete	Consult Factory	
DSR30-15-48	Obsolete	Consult Factory	

MODEL	STATUS	REPLACED BY	PG
DSR30-24-24	Obsolete	Consult Factory	
DSR30-24-48	Obsolete	Consult Factory	
DSR30-48-24	Obsolete	Consult Factory	
DSR30-48-48	Obsolete	Consult Factory	
DSR30-5-24	Obsolete	Consult Factory	
DSR30-5-48	Obsolete	Consult Factory	
DSR50-12-24	Obsolete	Consult Factory	
DSR50-12-48	Obsolete	Consult Factory	
DSR50-15-24	Obsolete	Consult Factory	
DSR50-15-48	Obsolete	Consult Factory	
DSR50-24-24	Obsolete	Consult Factory	
DSR50-24-48	Obsolete	Consult Factory	
DSR50-48-24	Obsolete	Consult Factory	
DSR50-48-48	Obsolete	Consult Factory	
DSR50-5-24	Obsolete	Consult Factory	
DSR50-5-48	Obsolete	Consult Factory	
EWS100P-12	BTO: 10 PC. Min.	JWS100	24
EWS100P-15	BTO: 10 PC. Min.	JWS100	24
EWS100P-24	BTO: 10 PC. Min.	JWS100	24
EWS100P-28	BTO: 10 PC. Min.	JWS100	24
EWS100P-3.3	BTO: 10 PC. Min.	JWS100	24
EWS100P-48	BTO: 10 PC. Min.	JWS100	24
EWS100P5	BTO: 10 PC. Min.	JWS100	24
EWS15-12	BTO: 10 PC. Min.	RWS15A-12/A	22
EWS15-15	BTO: 10 PC. Min.	RWS15A-15/A	22
EWS15-24	BTO: 10 PC. Min.	RWS15A-24/A	22
EWS15-28	BTO: 10 PC. Min.	RWS15A-28/A	22
EWS15-48	BTO: 10 PC. Min.	RWS15A-48/A	22
EWS15-5	BTO: 10 PC. Min.	RWS15A-5/A	22
EWS15-6	BTO: 10 PC. Min.	RWS15A-6/A	22
EWS1500-12	BTO: 10 PC. Min.	LZS1500-2	58
EWS1500-15	BTO: 10 PC. Min.	LZS1500-2	58
EWS1500-2	BTO: 10 PC. Min.	UltraFlex	50
EWS1500-24	BTO: 10 PC. Min.	LZS1500-3	58
EWS1500-3.3	BTO: 10 PC. Min.	LZS1500-1	58
EWS1500-48	BTO: 10 PC. Min.	UltraFlex	66
EWS1500-5	BTO: 10 PC. Min.	LZS1500-1	58
EWS150P-12	BTO: 10 PC. Min.	JWS150	24
EWS150P-15	BTO: 10 PC. Min.	JWS150	24
EWS150P-24	BTO: 10 PC. Min.	JWS150	24
EWS150P-28	BTO: 10 PC. Min.	JWS150	24
EWS150P-3.3	BTO: 10 PC. Min.	JWS150	24
EWS150P-48	BTO: 10 PC. Min.	JWS150	24
EWS150P-5	BTO: 10 PC. Min.	JWS150	24
EWS180-12	Obsolete	JWS150	24
EWS180-15	Obsolete	JWS150	24
EWS180-24	Obsolete	JWS150	24
EWS180-28	Obsolete	JWS150	24
EWS180-48	Obsolete	JWS150	24
EWS180-5	Obsolete	JWS150	24
EWS180-6	Obsolete	JWS150	24
EWS25-12	BTO: 10 PC. Min.	RWSA30	22
EWS25-15	BTO: 10 PC. Min.	RWSA30	22
EWS25-24	BTO: 10 PC. Min.	RWSA30	22
EWS25-28	BTO: 10 PC. Min.	RWSA30	22
EWS25-48	BTO: 10 PC. Min.	RWSA30	22
EWS25-5	BTO: 10 PC. Min.	RWSA30	22
EWS25-6	BTO: 10 PC. Min.	RWSA30	22
EWS3000T-12	BTO: 10 PC. Min.	LZS1500X2	58
EWS3000T-15	BTO: 10 PC. Min.	LZS1500X2	58
EWS3000T-2	BTO: 10 PC. Min.		
EWS3000T-24	BTO: 10 PC. Min.	FE	66
EWS3000T-3.3	BTO: 10 PC. Min.	LZS1500X2	58
EWS3000T-48	BTO: 10 PC. Min.	FE	66
EWS3000T-5	BTO: 10 PC. Min.	LZS1500X2	58
EWS300P-12	BTO: 10 PC. Min.	JWS300	24
EWS300P-15	BTO: 10 PC. Min.	JWS300	24
EWS300P-2	BTO: 10 PC. Min.	JWS300	24
EWS300P-24	BTO: 10 PC. Min.	JWS300	24
EWS300P-28	BTO: 10 PC. Min.	JWS300	24
EWS300P-3.3	BTO: 10 PC. Min.	JWS300	24
EWS300P-48	BTO: 10 PC. Min.	JWS300	24
EWS300P-5	BTO: 10 PC. Min.	JWS300	24
EWS50-12	BTO: 10 PC. Min.	JWS50	24
EWS50-15	BTO: 10 PC. Min.	JWS50	24
EWS50-24	BTO: 10 PC. Min.	JWS50	24
EWS50-28	BTO: 10 PC. Min.	JWS50	24
EWS50-48	BTO: 10 PC. Min.	JWS50	24
EWS50-5	BTO: 10 PC. Min.	JWS50	24
EWS50-6	BTO: 10 PC. Min.	JWS50	24
EWS5000T-2	BTO: 10 PC. Min.		
EWS5000T-3.3	BTO: 10 PC. Min.		
EWS5000T-5	BTO: 10 PC. Min.		
EWS600P-12	BTO: 10 PC. Min.	JWS600	24
EWS600P-15	BTO: 10 PC. Min.	JWS600	24
EWS600P-2	BTO: 10 PC. Min.	JWS600	24
EWS600P-24	BTO: 10 PC. Min.	JWS600	24
EWS600P-28	BTO: 10 PC. Min.	JWS600	24
EWS600P-3.3	BTO: 10 PC. Min.	JWS600	24
EWS600P-48	BTO: 10 PC. Min.	JWS600	24
EWS600P-5	BTO: 10 PC. Min.	JWS600	24
FA-0000-00-000	Obsolete		
FA-A000-00-000	Obsolete		
FA-AA00-00-000	Obsolete		
FA-AB00-00-000	Obsolete		
FA-ABB0-00-000	Obsolete		
FA-ABBC-00-000	Obsolete		
FA-ABBD-00-000	Obsolete		
FA-ABD0-00-000	Obsolete		
FA-AD00-00-000	Obsolete		
FA-B000-00-000	Obsolete		
FA-BB00-00-000	Obsolete		
FA-C000-00-000	Obsolete		
FA-D000-00-000	Obsolete		
FA-DD00-00-000	Obsolete		
FA-E000-00-000	Obsolete		
FB-02	Obsolete		
FE0500-24-NA	BTO	FE0500-24-RA	66
FE0500-24-RA	Current Model		66
FE0500-48-NA	BTO	FE0500-48-RA	66
FE0500-48-RA	Current Model		66
FE1000-24-NA	BTO	FE1000-24-RA	66
FE1000-24-RA	Current Model		66
FE1000-48-NA	BTO	FE1000-48-RA	66
FE1000-48-RA	Current Model		66
FE1500-24-NA	BTO	FE1500-24-RA	66
FE1500-24-RA	Current Model		66
FE1500-48-NA	BTO	FE1500-48-RA	66
FE1500-48-RA	Current Model		66
FE2000-24-NA	BTO	FE2000-24-RA	66
FE2000-24-RA	Current Model		66
FE2000-48-NA	BTO	FE2000-48-RA	66
FE2000-48-RA	Current Model		66
FE4K-L-E-24	Current Model		66
FE4K-L-E-48	Current Model		66
FE4K-L-N-24	BTO		66
FE4K-L-N-48	BTO		66
FE4K-N-E	Current Model		66
FE4K-N-N	BTO		66
FE4K-X-E	Current Model		66
FE4K-X-N	BTO		66
FE5K-L-E-24	Current Model		66
FE5K-L-E-24	Current Model		66
FE5K-L-E-48	Current Model		66
FE5K-L-E-48	Current Model		66
FE5K-L-N-24	BTO		66
FE5K-L-N-24	BTO		66
FE5K-L-N-48	BTO		66
FE5K-L-N-48	BTO		66
FE5K-N-E	Current Model		66
FE5K-N-N	BTO		66
FE5K-X-E	Current Model		66
FE5K-X-N	BTO		66
FE6K-N-E	Current Model		66
FE6K-N-N	BTO		66
FE6K-X-E	Current Model		66
FE6K-X-N	BTO		66
FEFIL4K	Current Model		66
FEFIL5K	Current Model		66
FEFIL6K	Current Model		66
FK-01	Obsolete	Consult Factory	
FK-02	Obsolete	Consult Factory	
FK-03	Obsolete	Consult Factory	
FN-01	Obsolete	Consult Factory	
FN-02	Obsolete	Consult Factory	
FR-01	Obsolete	Consult Factory	
FT-01	Obsolete	Consult Factory	
FZLS080-008	Obsolete	Consult Factory	
FZLS080-018	Obsolete	Consult Factory	
FZLS080-040	Obsolete	Consult Factory	
FZLS080-060	Obsolete	Consult Factory	
FZLS080-120	Obsolete	Consult Factory	
GLS24-12	Obsolete	PH100S24	82
GLS24-15	Obsolete	PH100S24	82
GLS24-24	Obsolete	PH100S24	82
GLS24-48	Obsolete	PH100S24	82
GLS24-5	Obsolete	PH100S24	82
GLS24-6	Obsolete	PH100S24	82
GLS270-12	Obsolete	PHXXXX280	82
GLS270-15	Obsolete	PHXXXX280	82
GLS270-24	Obsolete	PHXXXX280	82
GLS270-48	Obsolete	PHXXXX280	82
GLS270-5	Obsolete	PHXXXX280	82
GLS270-6	Obsolete	PHXXXX280	82
GLS48-12	Obsolete	PH150S48	82
GLS48-15	Obsolete	PH150S48	82
GLS48-24	Obsolete	PH150S48	82
GLS48-48	Obsolete	PH150S48	82
GLS48-5	Obsolete	PH150S48	82
GLS48-6	Obsolete	PH150S48	82
GLT24-5/12/12	Obsolete	PH/PM/PP	82,76,74
GLT24-5/15/15	Obsolete	PH/PM/PP	82,76,74
GLT270-5/12/12	Obsolete	PH/PM/PP	82,76,74
GLT270-5/15/15	Obsolete	PH/PM/PP	82,76,74
GLT48-5/12/12	Obsolete	PH/PM/PP	82,76,74
GLT48-5/15/15	Obsolete	PH/PM/PP	82,76,74
HSS100	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS100/1	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS100/11	BTO: 50 PC. Min.	SV170-1	44
HSS100/16	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS100/18	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS100/2	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS100/3	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS100/4	BTO: 50 PC. Min.	SV200-2	44
HSS100/5	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS100/7	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS150	BTO: 100 PC. Min.	SV & ZWS	44,14
HSS150/1	BTO: 100 PC. Min.	SV & ZWS	44,14

Index by model number

MODEL	STATUS	REPLACED BY	PG
HSS150/2	BTO: 100 PC. Min.	SV & ZWS	44,14
HSS150/3	BTO: 100 PC. Min.	SV & ZWS	44,14
HSS180 00	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS180 01	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS180 02	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS180 05	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS180 06	BTO: 50 PC. Min.	SV & ZWS	44,14
HSS180 09	BTO: 50 PC. Min.	SV & ZWS	44,14
KHT-20-015	Current Model		
KHT-24-014	Current Model		
KHT-34-012	Current Model		
KHT-44-013	Current Model		
KS10-12	BTO: 100 PC. Min.	KWS10-12	10
KS10-5	BTO: 100 PC. Min.	KWS10-5	10
KS15-12	BTO: 100 PC. Min.	KWS15-12	10
KS15-5	BTO: 100 PC. Min.	KWS15-5	10
KS5-12	BTO: 100 PC. Min.	KWS5-12	10
KS5-5	BTO: 100 PC. Min.	KWS5-5	10
KT-44	Current Model		
KT-45	Current Model		
KT-46	Current Model		
KT-47	Current Model		
KT-48	Current Model		
KT-49	Current Model		
KT-50	Current Model		
KT-51	Current Model		
KT-52	Current Model		
KT-53	Current Model		
KT-54	Current Model		
KWD10-1212	Current Model		10
KWD10-1515	Current Model		10
KWD15-1212	Current Model		10
KWD15-1515	Current Model		10
KWD5-1212	Current Model		10
KWD5-1515	Current Model		10
KWS10-12	Current Model		10
KWS10-15	Current Model		10
KWS10-5	Current Model		10
KWS15-12	Current Model		10
KWS15-15	Current Model		10
KWS15-5	Current Model		10
KWS5-12	Current Model		10
KWS5-15	Current Model		10
KWS5-5	Current Model		10
L-12A-OV-12	Current Model		
L-12A-OV-15	Current Model		
L-12A-OV-24	Current Model		
L-12A-OV-28	Current Model		
L-12A-OV-30	Current Model		
L-12A-OV-5	Current Model		
L-12A-OV-A	Current Model		
L-6A-OV-12	Current Model		
L-6A-OV-15	Current Model		
L-6A-OV-24	Current Model		
L-6A-OV-28	Current Model		
L-6A-OV-30	Current Model		
L-6A-OV-5	Current Model		
L-6A-OV-A	Current Model		
LBP-10	BTO: 10 PC. Min.		
LBP-11	BTO: 10 PC. Min.		
LBP-12	Current Model		103
LBP-13	BTO: 10 PC. Min.		
LBP-14	Current Model		103
LBP-15	BTO: 10 PC. Min.		
LBP-20	BTO: 10 PC. Min.		
LBP-21	BTO: 10 PC. Min.		
LCS-A-01	Obsolete	LDS-Y-01	36
LCS-A-02	Obsolete	LDS-Y-02	36
LCS-A-03	Obsolete	LDS-Y-03	36
LCS-A-04	Obsolete	LMS-6060	40
LCS-A-05	Obsolete	LMS-6120	40
LCS-A-10	Obsolete	LMS-6018	40
LCS-A-100	Obsolete	LMS-6120	40
LCS-A-12	Obsolete	LNS-X-12	36
LCS-A-120	Obsolete	LMS-6120	40
LCS-A-15	Obsolete	LNS-X-15	36
LCS-A-150	Obsolete	Consult Factory	
LCS-A-18	Obsolete	LMS-6018	40
LCS-A-2	Obsolete	LMS-6008	40
LCS-A-20	Obsolete	LMS-6040	40
LCS-A-24	Obsolete	LNS-X-24	36
LCS-A-28	Obsolete	LNS-X-28	36
LCS-A-36	Obsolete	LMS-6040	40
LCS-A-48	Obsolete	LMS-6060	40
LCS-A-5-OV	Obsolete	LNS-X-5-OV	36
LCS-A-6	Obsolete	LMS-6008	40
LCS-B-01	Obsolete	LDS-Y-01	36
LCS-B-02	Obsolete	LDS-Y-02	36
LCS-B-03	Obsolete	LDS-Y-03	36
LCS-B-12	Obsolete	LNS-X-12	36
LCS-B-120	Obsolete	LMS-6120	40
LCS-B-15	Obsolete	LNS-X-15	36
LCS-B-150	Obsolete	Consult Factory	
LCS-B-2	Obsolete	LMS-6008	40
LCS-B-20	Obsolete	LMS-6040	40
LCS-B-24	Obsolete	LNS-X-24	36
LCS-B-28	Obsolete	LNS-X-28	36
LCS-B-36	Obsolete	LMS-6040	40
LCS-B-48	Obsolete	LMS-6060	40
LCS-B-5-OV	Obsolete	LNS-X-5-OV	36
LCS-B-6	Obsolete	LMS-6008	40
LCS-C-01	Obsolete	LDS-X-01	36
LCS-C-02	Obsolete	LDS-X-02	36
LCS-C-03	Obsolete	LDS-X-03	36
LCS-C-100	Obsolete	LMS-6120	40
LCS-C-12	Obsolete	LNS-X-12	36
LCS-C-120	Obsolete	LMS-6120	40
LCS-C-15	Obsolete	LNS-X-15	36
LCS-C-150	Obsolete	Consult Factory	
LCS-C-2	Obsolete	LMS-6008	40
LCS-C-20	Obsolete	LMS-6040	40
LCS-C-24	Obsolete	LNS-X-24	36
LCS-C-28	Obsolete	LNS-X-28	36
LCS-C-36	Obsolete	LMS-6040	40
LCS-C-48	Obsolete	LMS-6060	40
LCS-C-5-OV	Obsolete	LNS-X-5-OV	36
LCS-C-6	Obsolete	LMS-6008	40
LCS-CC-01	Obsolete	LDS-P-01	36
LCS-CC-02	Obsolete	LDS-P-02	36
LCS-CC-03	Obsolete	LDS-P-03	36
LCS-CC-12	Obsolete	LNS-P-12	36
LCS-CC-15	Obsolete	LNS-P-15	36
LCS-CC-2	Obsolete	LMS-6008	40
LCS-CC-20	Obsolete	LMS-6040	40
LCS-CC-24	Obsolete	LNS-P-24	36
LCS-CC-28	Obsolete	LNS-P-28	36
LCS-CC-48	Obsolete	LNS-P-48	36
LCS-CC-5-OV	Obsolete	LNS-P-5	36
LCS-CC-6	Obsolete	LMS-6008	40
LDS-P-01	Current Model		36
LDS-P-02	Current Model		36
LDS-P-03	Current Model		36
LDS-P-100	BTO: 10 PC. Min.	LMS6120/LDS-P120	40,36
LDS-P-12	BTO: 10 PC. Min.	LNS-P-12	36
LDS-P-120	BTO: 10 PC. Min.	LMS-6120	40
LDS-P-15	BTO: 10 PC. Min.		36
LDS-P-150	BTO: 10 PC. Min.		36
LDS-P-20	BTO: 10 PC. Min.		36
LDS-P-24	BTO: 10 PC. Min.	LNS-P-24	36
LDS-P-28	BTO: 10 PC. Min.	LNS-P-28	36
LDS-P-48	BTO: 10 PC. Min.	LNS-P-48	36
LDS-P-5-OV	Obsolete	LDS-P-5	36
LDS-P-5	BTO: 10 PC. Min.	LNS-P-5	36
LDS-W-01	BTO: 10 PC. Min.	LDS-P-01	36
LDS-W-02	BTO: 10 PC. Min.	LDS-P-02	36
LDS-W-03	BTO: 10 PC. Min.	LDS-P-03	36
LDS-W-12	Current Model		36
LDS-W-15	Current Model		36
LDS-W-20	BTO: 10 PC. Min.		36
LDS-W-24	Current Model		36
LDS-W-28	Current Model		36
LDS-W-48	BTO: 10 PC. Min.		36
LDS-W-5-OV	BTO: 10 PC. Min.		36
LDS-X-01	Current Model		36
LDS-X-02	Current Model		36
LDS-X-03	BTO: 10 PC. Min.	LDS-P-03	36
LDS-X-12	BTO: 10 PC. Min.	LNS-X-12	36
LDS-X-15	BTO: 10 PC. Min.	LNS-X-15	36
LDS-X-20	BTO: 10 PC. Min.		36
LDS-X-24	BTO: 10 PC. Min.	LNS-X-24	36
LDS-X-28	BTO: 10 PC. Min.	LNS-X-28	36
LDS-X-48	BTO: 10 PC. Min.		36
LDS-X-5-OV	BTO: 10 PC. Min.	LNS-X-5-OV	36
LDS-Y-01	Current Model		36
LDS-Y-02	Current Model		36
LDS-Y-03	Current Model		36
LDS-Y-100	BTO: 10 PC. Min.	LMS6120	40
LDS-Y-12	BTO: 10 PC. Min.	LNS-Y-12	36
LDS-Y-120	BTO: 10 PC. Min.	LMS6120	40
LDS-Y-15	BTO: 10 PC. Min.	LNS-Y-15	36
LDS-Y-150	BTO: 10 PC. Min.		36
LDS-Y-20	BTO: 10 PC. Min.		36
LDS-Y-24	BTO: 10 PC. Min.	LNS-Y-24	36
LDS-Y-28	BTO: 10 PC. Min.	LNS-Y-28	36
LDS-Y-48	BTO: 10 PC. Min.		36
LDS-Y-5-OV	BTO: 10 PC. Min.	LNS-Y-5-OV	36
LFQ-26	Obsolete	UltraFlexF/RP	50,54
LFQ-26-1	Obsolete	UltraFlexF/RP	50,54
LFQ-27	Obsolete	UltraFlexF/RP	50,54
LFQ-27-1	Obsolete	UltraFlexF/RP	50,54
LFQ-28	Obsolete	UltraFlexF/RP	50,54
LFQ-28-1	Obsolete	UltraFlexF/RP	50,54
LFQ-29	Obsolete	UltraFlexF/RP	50,54
LFQ-29-1	Obsolete	UltraFlexF/RP	50,54
LFQ-30	Obsolete	RP1000	54
LFQ-30-1	Obsolete	RP1000	54
LFS-38 SERIES	BTO: 10 PC. Min.	RWS30A	22
LFS-39 Series	BTO: 10 PC. Min.	RWS30A	22
LFS-40 Series	BTO: 10 PC. Min.	RWS50A	22
LFS-41Series	BTO: 10 PC. Min.	SVS100/JWS100	44,24
LFS-42 Series	BTO: 10 PC. Min.	SVS150/JWS150	44,24
LFS-43 Series	BTO: 10 PC. Min.	SVPS25/JWS300	44,24
LFS-44 Series	BTO: 10 PC. Min.	SVPS25/JWS300	44,24
LFS-45 Series	BTO: 10 PC. Min.	JFS500/JWS600	28
LFS-45A Series	BTO: 10 PC. Min.	JFS500/JWS600	28
LFS-46 Series	BTO: 10 PC. Min.	JWS600/JFS750	24
LFS-47 Series	BTO: 10 PC. Min.	JFS750	28
LFS-48 Series	BTO: 10 PC. Min.	JFS1000/LZS1000	28,58

MODEL	STATUS	REPLACED BY	PG
LFS-49 Series	BTO: 10 PC. Min.	JFS1500	28
LFS-50 Series	BTO: 10 PC. Min.	JFS2000	28
LFS-52-2, 5, 8	BTO: 10 PC. Min.		
LGS-5A Series	Obsolete	LZS250/LZS500	58
LGS-6A Series	Obsolete	LZS500	58
LGS-EEA Series	Obsolete	LZS750	58
LH-OV-4	Current Model		
LH-OV-5	Current Model		
LH-OV-6	Current Model		
LIS-3 Series	Obsolete	Consult Factory	
LIS-3I Series	Obsolete	Consult Factory	
LIS-5 Series	Obsolete	Consult Factory	
LIS-5I Series	Obsolete	Consult Factory	
LIS-6 Series	Obsolete	Consult Factory	
LIS-6I Series	Obsolete	Consult Factory	
LIS-7 Series	Obsolete	Consult Factory	
LIS-7I Series	Obsolete	Consult Factory	
LIS-8 Series	Obsolete	Consult Factory	
LIS-8I Series	Obsolete	Consult Factory	
LIS-9 Series	Obsolete	Consult Factory	
LIS-9I Series	Obsolete	Consult Factory	
LIT-6I-5152	Obsolete	Consult Factory	
LIT-8I-5152	Obsolete	Consult Factory	
LK-340-A-FM	Obsolete	Consult Factory	
LK-341-A-FM	Obsolete	Consult Factory	
LK-342-A-FM	Obsolete	Consult Factory	
LK-343-A-FM	Obsolete	Consult Factory	
LK-344-A-FM	Obsolete	Consult Factory	
LK-345-A-FM	Obsolete	Consult Factory	
LK-350-FM	Obsolete	Consult Factory	
LK-351-FM	Obsolete	Consult Factory	
LK-352-FM	Obsolete	Consult Factory	
LLS-3000 Series	Obsolete	LLS5000	98
LLS-3000-GPIB	Obsolete	Consult Factory	
LLS-4000 Series	Obsolete	LLS5000	98
LLS-5008	Current Model		98
LLS-5018	Current Model		98
LLS-5040	Current Model		98
LLS-5060	Current Model		98
LLS-5120	Current Model		98
LLS-5300	Current Model		98
LLS-6008	Current Model		98
LLS-6018	Current Model		98
LLS-6040	Current Model		98
LLS-6060	Current Model		98
LLS-6120	Current Model		98
LLS-6000-GPIB	Obsolete	Consult Factory	
LLS-7000 Series	Obsolete	LLS8000	98
LLS-7000-GPIB	Obsolete	Consult Factory	
LLS-8008	Current Model		98
LLS-8018	Current Model		98
LLS-8040	Current Model		98
LLS-8060	Current Model		98
LLS-8120	Current Model		98
LLS-9008	Current Model		98
LLS-9018	Current Model		98
LLS-9040	Current Model		98
LLS-9060	Current Model		98
LLS-9120	Current Model		98
LLS-9000-GPIB	Obsolete	Consult Factory	
LM-OV-1	Obsolete	LH-OV-4	40
LM-OV-2	Obsolete	LH-OV-5	40
LM-OV-3	Obsolete	LH-OV-6	40
LM-OV-7	Obsolete		
LM-OV-8	Obsolete		
LM-OV-9	Obsolete		
LMS-3000 Series	Obsolete	LMS-6000	40
LMS-4000 Series	Obsolete	LMS-6000	40
LMS-5000 Series	Obsolete	LMS-6000	40
LMS-6008	Current Model		40
LMS-6018	Current Model		40
LMS-6040	Current Model		40
LMS-6060	Current Model		40
LMS-6120	Current Model		40
LMS-6300	Current Model		40
LMS-7000 Series	Obsolete	LMS9000	40
LMS-8000 Series	Obsolete	LMS9000	40
LMS-9008	Current Model		40
LMS-9018	Current Model		40
LMS-9040	Current Model		40
LMS-9060	Current Model		40
LMS-9120	Current Model		40
LMS-9300	Current Model		40
LND-P-152	Current Model		36
LND-W-152	Current Model		36
LND-X-152	Current Model		36
LND-X-MPU	Obsolete	Consult Factory	
LND-Y-152	Current Model		36
LND-Z-152	Current Model		36
LNS-P-12	Current Model		36
LNS-P-15	Current Model		36
LNS-P-20	BTO: 10 PC. Min.		36
LNS-P-24	Current Model		36
LNS-P-28	Current Model		36
LNS-P-48	Current Model		36
LNS-P-5	Current Model		36
LNS-P-6	BTO: 10 PC. Min.		36
LNS-W-12	BTO: 10 PC. Min.	LNS-P	36
LNS-W-15	BTO: 10 PC. Min.	LNS-P	36
LNS-W-20	BTO: 10 PC. Min.	LNS-P	36
LNS-W-24	BTO: 10 PC. Min.	LNS-P	36
LNS-W-28	BTO: 10 PC. Min.	LNS-P	36
LNS-W-5-OV	BTO: 10 PC. Min.	LNS-P	36
LNS-W-6	BTO: 10 PC. Min.	LNS-P	36
LNS-X-12	Current Model		36
LNS-X-15	Current Model		36
LNS-X-20	BTO: 10 PC. Min.		36
LNS-X-24	Current Model		36
LNS-X-28	Current Model		36
LNS-X-5-OV	Current Model		36
LNS-X-6	BTO: 10 PC. Min.		36
LNS-Y-12	BTO: 10 PC. Min.	LNS-X	36
LNS-Y-15	BTO: 10 PC. Min.	LNS-X	36
LNS-Y-20	BTO: 10 PC. Min.	LNS-X	36
LNS-Y-24	BTO: 10 PC. Min.	LNS-X	36
LNS-Y-28	BTO: 10 PC. Min.	LNS-X	36
LNS-Y-5-OV	BTO: 10 PC. Min.	LNS-X	36
LNS-Y-6	BTO: 10 PC. Min.	LNS-X	36
LNS-Z-12	Current Model		36
LNS-Z-15	Current Model		36
LNS-Z-20	BTO: 10 PC. Min.		36
LNS-Z-24	Current Model		36
LNS-Z-28	Current Model		36
LNS-Z-5-OV	Current Model		36
LNS-Z-6	BTO: 10 PC. Min.		36
LOD-W-152	Obsolete	LND-W-152	36
LOD-X-152	Obsolete	LND-X-152/HDB-12-15	36
LOD-Y-152	Obsolete	LND-Y-152/HDB-12-15	36
LOD-Z-152	Obsolete	LND-Z-152/HAD-12-15	36
LOS-R-12	Obsolete	JWS300	24
LOS-R-15	Obsolete	JWS300	24
LOS-R-2	Obsolete	Consult Factory	
LOS-R-20	Obsolete	Consult Factory	
LOS-R-24	Obsolete	JWS300	24
LOS-R-28	Obsolete	JWS300	24
LOS-R-5	Obsolete	JWS300	24
LOS-R-6	Obsolete	Consult Factory	
LOS-W-12	Obsolete	LNS-W-12	36
LOS-W-15	Obsolete	LNS-W-15	36
LOS-W-2	Obsolete	Consult Factory	
LOS-W-20	Obsolete	Consult Factory	
LOS-W-24	Obsolete	LNS-W-24	36
LOS-W-28	Obsolete	LNS-W-28/HSD-28-4.0	36,34
LOS-W-5	Obsolete	LNS-W-5-OV	36
LOS-W-6	Obsolete	LMS-6008	40
LOS-X-12	Obsolete	LNS-X-12/HSN-12-5.1	36,34
LOS-X-15	Obsolete	LNS-X-15/HSN-15-4.5	36,34
LOS-X-2	Obsolete	LMS-6008	40
LOS-X-20	Obsolete	LMS-6040	40
LOS-X-24	Obsolete	LNS-X-24/HSN-24-4.8	36,34
LOS-X-28	Obsolete	LNS-X-24/HSN-28-3.0	36,34
LOS-X-5	Obsolete	LNS-X-5-OV/HSN-5-9-OVP	36,34
LOS-X-6	Obsolete	LMS-6008	40
LOS-Y-12	Obsolete	LNS-Y-12/HSC-12-3.4	36,34
LOS-Y-15	Obsolete	LNS-Y-15/HSC-15-3	36,34
LOS-Y-2	Obsolete	LMS-6008	40
LOS-Y-20	Obsolete	LMS-6040	40
LOS-Y-24	Obsolete	LNS-Y-24/HSC-24-2.4	36,34
LOS-Y-28	Obsolete	LNS-Y-24/HSC-28-2.0	36,34
LOS-Y-5	Obsolete	LNS-Y-5-OV/HSC-5-6-OVP	36,34
LOS-Y-6	Obsolete	LMS-6008	40
LOS-Z-12	Obsolete	LNS-Z-12/HSB-12-1.7	36,34
LOS-Z-15	Obsolete	LNS-Z-15/HSB-15-1.5	36,34
LOS-Z-2	Obsolete	LMS-6008	40
LOS-Z-20	Obsolete	LMS-6040	40
LOS-Z-24	Obsolete	LNS-Z-24/HSB-24-1.2	36,34
LOS-Z-28	Obsolete	LNS-Z-28/HSB-28-1.0	36,34
LOS-Z-5	Obsolete	LNS-Z-5-OV/HSB-5-3-OVP	36,34
LOS-Z-6	Obsolete	LMS-6008	40
LOT-W-5152A	Obsolete	HTD1	34
LOT-X-5152A	Obsolete	HTC1	34
LQ-410	Obsolete	LLS Series	98
LQ-411	Obsolete	LLS Series	98
LQ-412	Obsolete	LLS Series	98
LQ-413	Obsolete	LLS Series	98
LQ-415	Obsolete	LLS Series	98
LQ-520	Obsolete	LLS Series	98
LQ-521	Obsolete	LLS Series	98
LQ-522	Obsolete	LLS Series	98
LQ-523	Obsolete	LLS Series	98
LQ-524	Obsolete	LLS Series	98
LQ-530	Obsolete	LLS Series	98
LQ-531	Obsolete	LLS Series	98
LQ-532	Obsolete	LLS Series	98
LQ-533	Obsolete	LLS Series	98
LQ-534	Obsolete	LLS Series	98
LQD-421	Obsolete	2 x LLS Series	98
LQD-422	Obsolete	2 x LLS Series	98
LQD-423	Obsolete	2 x LLS Series	98
LQD-424	Obsolete	2 x LLS Series	98
LQD-425	Obsolete	2 x LLS Series	98
LRA-14	Current Model		103
LRA-14-CS	Current Model		103
LRA-15	Current Model		103
LRA-15-CS	Current Model		103
LRA-17	Current Model		103
LRA-17-CS	Current Model		103
LRA-18	Current Model		103

Index by model number

MODEL	STATUS	REPLACED BY	PG
LRA-18-CS	Current Model		103
LRA-20	Current Model		103
LRA-20-CS	Current Model		103
LRS-49 Series	BTO: 25 PC. Min.	JWS50	24
LRS-50 Series	BTO: 25 PC. Min.	JWS50	24
LRS-51 Series	BTO: 25 PC. Min.	JWS50/JWS75	24
LRS-52 Series	BTO: 10 PC. Min.	JWS75	24
LRS-53 Series	BTO: 10 PC. Min.	JWS150	24
LRS-53M Series	Obsolete	JWS150	24
LRS-54 Series	BTO: 10 PC. Min.	LZS250/SE250	58
LRS-54M Series	BTO: 10 PC. Min.	LZS250	58
LRS-55 Series	BTO: 10 PC. Min.	LZS500/SE500	58
LRS-55V Series	BTO: 10 PC. Min.	LZS500	58
LRS-56-12	Current Model		62
LRS-56-15	Current Model		62
LRS-56-2	BTO: 10 PC. Min.	JWS600P	24
LRS-56-20	BTO: 10 PC. Min.	LZS500/SE500	58
LRS-56-24	Current Model		62
LRS-56-28	Current Model		62
LRS-56-48	BTO: 10 PC. Min.	JWS600	24
LRS-56-5	Current Model		62
LRS-56-6	BTO: 10 PC. Min.	LZS500/SE500	58
LRS-56V Series	BTO: 10 PC. Min.	LZS500	58
LRS-57 Series	BTO: 10 PC. Min.	LZS750	58
LRS-58 Series	BTO: 10 PC. Min.	LZS1000	58
LRS-59-12	Current Model		62
LRS-59-15	Current Model		62
LRS-59-2	BTO: 10 PC. Min.		62
LRS-59-20	BTO: 10 PC. Min.	LZS1500	58
LRS-59-24	Current Model		62
LRS-59-28	Current Model		62
LRS-59-48	BTO: 10 PC. Min.	JFS2000	28
LRS-59-5	Current Model		62
LRS-59-6	BTO: 10 PC. Min.	LZS1500	58
LSS-34 Series	BTO: 10 PC. Min.	RWS-15A	22
LSS-35 Series	BTO: 10 PC. Min.	RWS-15A	22
LSS-36 Series	BTO: 10 PC. Min.	RWS-30A	22
LSS-37 Series	BTO: 10 PC. Min.	JWS50	24
LSS-38 Series	BTO: 10 PC. Min.	JWS150	24
LSS-39 Series	BTO: 10 PC. Min.	JWS150	24
LST-37-131	BTO: 10 PC. Min.	LWT50H	20
LST-37-133	BTO: 10 PC. Min.	LWT50H	20
LST-37-144	BTO: 10 PC. Min.	SVT115	44
LST-38-131	BTO: 10 PC. Min.	SVT115	44
LST-38-133	BTO: 10 PC. Min.	SVT115	44
LST-38-144	BTO: 10 PC. Min.	SVT115	44
LST-39-131	BTO: 10 PC. Min.	SVT115	44
LST-39-133	BTO: 10 PC. Min.	SVT115	44
LST-39-144	BTO: 10 PC. Min.	SVT115	44
LST-40-131	BTO: 10 PC. Min.	SVT170	44
LST-40-133	BTO: 10 PC. Min.	SVT170	44
LST-40-144	BTO: 10 PC. Min.	SVT170	44
LT- PRODUCT	Obsolete	Consult Factory	
LUD-15-13	Obsolete	LWD50-0512	20
LUD-15-16	Obsolete	LWD50-0524	20
LUD-15-31	Obsolete	2 x RWSA/A	22
LUD-15-33	Obsolete	2 x RWSA/A	22
LUD-15-44	Obsolete	2 x RWSA/A	22
LUD-16-13	Obsolete	SVT115-1-Z	44
LUD-16-16	Obsolete	2 x JWS50/A	24
LUD-16-31	Obsolete	JWS50/A & RWS15A	24,22
LUD-16-33	Obsolete	JWS75/A & RWS30A	24,22
LUD-16-44	Obsolete	LND-P-152	36
LUS-10A Series	Obsolete	JWS50/A	24
LUS-11 Series	Obsolete	SVPS10	44
LUS-8A Series	Obsolete	RWS15A	22
LUS-9A Series	Obsolete	RWS30A	22

MODEL	STATUS	REPLACED BY	PG
LUT-12 Series	Obsolete	SVTP115/Z	44
LUT-13 Series	Obsolete	SVTP115/Z	44
LUT-14 Series	Obsolete	SVTP115/Z	44
LUT-6 Series	Obsolete	SVTP115/Z	44
LVS-42 B Series	Obsolete	VS10B	12
LVS-42E Series	Obsolete	ZWS10	14
LVS-43 B Series	Obsolete	VS15B	12
LVS-43E Series	Obsolete	ZWS15	14
LVS-44 B Series	Obsolete	VS30B	12
LVS-44E Series	Obsolete	ZWS30	14
LVS-45 B Series	Obsolete	VS50B	12
LVS-45E Series	Obsolete	ZWS50	14
LVT-38E Series	Obsolete	SWT40	18
LVT-39E Series	Obsolete	SWT40	18
LVT-40 B Series	Obsolete	SWT40	18
LVT-40E Series	Obsolete	SWT40	18
LVT-41 B Series	Obsolete	SWT65	18
LVT-41E Series	Obsolete	SWT65	18
LVT-42E Series	Obsolete	SWT65	18
LWD-15-0512	Current Model		20
LWD-15-0524	Current Model		20
LWD-15-1212	Current Model		20
LWD-15-1224	Current Model		20
LWD-15-1515	Current Model		20
LWD-30-0512	Current Model		20
LWD-30-0524	Current Model		20
LWD-30-1212	Current Model		20
LWD-30-1224	Current Model		20
LWD-30-1515	Current Model		20
LWD-50-0512	Current Model		20
LWD-50-0524	Current Model		20
LWD-50-1212	Current Model		20
LWD-50-1224	Current Model		20
LWD-50-1515	Current Model		20
LWQ-130-5222	BTO: 10 PC. Min.	SVPQ130	44
LWQ-130-5224	BTO: 10 PC. Min.	SVPQ130	44
LWQ-130-5225	BTO: 10 PC. Min.	SVPQ130	44
LWQ-130-5FF2	BTO: 10 PC. Min.	SVPQ130	44
LWQ-130-5FF4	BTO: 10 PC. Min.	SVPQ130	44
LWQ-130-5FF5	BTO: 10 PC. Min.	SVPQ130	44
LWQ-200-5222	BTO: 10 PC. Min.	SVPQ200	44
LWQ-200-5224	BTO: 10 PC. Min.	SVPQ200	44
LWQ-200-5225	BTO: 10 PC. Min.	SVPQ200	44
LWQ-200-5FF2	BTO: 10 PC. Min.	SVPQ200	44
LWQ-200-5FF4	BTO: 10 PC. Min.	SVPQ200	44
LWQ-200-5FF5	BTO: 10 PC. Min.	SVPQ200	44
LWQ-80-5222	BTO: 10 PC. Min.	SVPQ130	44
LWQ-80-5224	BTO: 10 PC. Min.	SVPQ130	44
LWQ-80-5225	BTO: 10 PC. Min.	SVPQ130	44
LWQ-80-5FF2	BTO: 10 PC. Min.	SVPQ130	44
LWQ-80-5FF4	BTO: 10 PC. Min.	SVPQ130	44
LWQ-80-5FF5	BTO: 10 PC. Min.	SVPQ130	44
LWS190 Series	Obsolete	PP3 Series	74
LWS191 Series	Obsolete	PP6 Series	74
LWS-193 Series	Obsolete	PP10 Series	74
LWS-194 Series	Obsolete	Consult Factory	
LWS-195 Series	Obsolete	PM Series	76
LWS-294 Series	Obsolete	PM Series	76
LWS-295 Series	Obsolete	PM Series	76
LWS-296 Series	Obsolete	PH Series	82
LWS-394 Series	Obsolete	PM Series	76
LWS-395 Series	Obsolete	PM Series	76
LWS-397 Series	Obsolete	PH Series	82
LWT-15H-522	Current Model		20
LWT-15H-525	Current Model		20
LWT-15H-5FF	Current Model		20
LWT-2H-522	BTO: 100 PC. Min.	LWT30H-522	20

MODEL	STATUS	REPLACED BY	PG
LWT-2H-525	BTO: 100 PC. Min.	LWT30H-525	20
LWT-2H-5FF	BTO: 100 PC. Min.	LWT30H-5FF	20
LWT-30H-522	Current Model		20
LWT-30H-525	Current Model		20
LWT-30H-5FF	Current Model		20
LWT-3H-522	BTO: 100 PC. Min.	LWT50H-522	20
LWT-3H-525	BTO: 100 PC. Min.	LWT50H-525	20
LWT-3H-5FF	BTO: 100 PC. Min.	LWT50H-5FF	20
LWT-4HA-522	BTO: 100 PC. Min.	SVT115-1	44
LWT-4HA-525	BTO: 100 PC. Min.	SWT100-525	18
LWT-4HA-5FF	BTO: 100 PC. Min.	SVT115-2	44
LWT-50H-522	Current Model		20
LWT-50H-525	Current Model		20
LWT-50H-5FF	Current Model		20
LXS-A Series	Obsolete	LNS-Z Series	36
LXS-C Series	Obsolete	LNS-X Series	36
LXS-D Series	Obsolete	LNS-P Series	36
LXS-E Series	Obsolete	JWS150 Series	24
LXS-EE Series	Obsolete	JWS300 Series	24
LYS-D Series	Obsolete	JWS600 Series	24
LYS-K Series	Obsolete	JWS600 Series	24
LYS-P Series	Obsolete	JWS300 Series	24
LYS-W Series	Obsolete	JWS150 Series	24
LYS-X Series	Obsolete	JWS150 Series	24
LYS-Y Series	Obsolete	JWS50 Series	24
LZD-21	Obsolete	2 x KWS5-5	10
LZD-22	Obsolete	KWD5	10
LZD-23	Obsolete	KWD5	10
LZD-32	Obsolete	KWD5	10
LZD-35	Obsolete	KWD10	10
LZS-10	Obsolete	KWS5	10
LZS-30	Obsolete	KWS5	10
LZS-1000-1	Current Model		58
LZS-1000-2	Current Model		58
LZS-1000-3	Current Model		58
LZS-11	Obsolete		58
LZS-150-1	BTO:10 PC. Min.	JWS150	24
LZS-150-2	BTO:10 PC. Min.	JWS150	24
LZS-150-3	BTO:10 PC. Min.	JWS150	24
LZS-1500-1	Current Model		58
LZS-1500-2	Current Model		58
LZS-1500-3	Current Model		58
LZS-250-1	Current Model		58
LZS-250-2	Current Model		58
LZS-250-3	Current Model		58
LZS-30	Obsolete		58
LZS-33	Obsolete		58
LZS-500-1	Current Model		58
LZS-500-2	Current Model		58
LZS-500-3	Current Model		58
LZS-750-1	Current Model		58
LZS-750-2	Current Model		58
LZS-750-3	Current Model		58
LZS50-1	BTO: 25 PC. Min.	JWS50	24
LZS50-2	BTO: 25 PC. Min.	JWS50	24
LZS50-3	BTO: 25 PC. Min.	JWS50	24
LZS50-4	BTO: 25 PC. Min.	JWS50	24
MAS-1206-33	BTO: 50 PC. Min		
MAS-1210-33	BTO: 50 PC. Min		
MAS-1215-33	BTO: 50 PC. Min		
MAS-1220-33	BTO: 50 PC. Min		
MBS-1210-22	BTO: 50 PC. Min	MXB	102
MBS-1220-22	BTO: 50 PC. Min	MXB	102
MBS-1330-33	BTO: 50 PC. Min	MXB	102
MBW-1203-22	BTO: 50 PC. Min	MXB	102
MBW-1205-22	BTO: 50 PC. Min	MXB	102
MIF-1201-33	Current Model		102

MODEL	STATUS	REPLACED BY	PG
MIF-1202-33	Current Model		102
MIF-1203-22	BTO: 50 Min		
MIF-1203-33	Current Model		102
MIF-1206-22	BTO: 50 Min		
MIF-1206-33	Current Model		102
MLGS-5A Series	Obsolete	LZS	58
MLGS-6A Series	Obsolete	LZS	58
MLGS-EEA Series	Obsolete	LZS	58
MRS-25	BTO: 10 PC. Min.		
MRS-53	BTO: 10 PC. Min.		
MRS-54	BTO: 10 PC. Min.		
MRS-55	BTO: 10 PC. Min.		
MRS-56	BTO: 10 PC. Min.		
MRS-60	BTO: 10 PC. Min.		
MRS-90	BTO: 10 PC. Min.		
MXB-1206-33	Current Model		102
MXB-1210-33	Current Model		102
MXB-1220-33	Current Model		102
MXB-1230-33	Current Model		102
MXB-1330-33	Current Model		102
NES60-24	Current Model		32
NES120-24	Current Model		32
NES240-24	Current Model		32
PAH146L12	Current Model		88
PAH146L12A	Current Model		88
PAH146L23	Current Model		88
PAH146W12	Current Model		88
PAH41L12	Current Model		88
PAH41L23	Current Model		88
PAH62L12	Current Model		88
PAH62L23	Current Model		88
PAH72L12	Current Model		88
PAH72L23	Current Model		88
PAH83L12	Current Model		88
PAH83L12A	Current Model		88
PAH83L23	Current Model		88
PAL02-2	Current Model		88
PAL03-1	Current Model		88
PAL05-1	Current Model		88
PAL10-1	Current Model		88
PASHC	Current Model		88
PASLC	Current Model		88
PATP146	Current Model		88
PATP41	Current Model		88
PATP62	Current Model		88
PATP72	Current Model		88
PATP83	Current Model		88
PBP-3201-22	Current Model		
PBP-3202-22	Current Model		
PBP-3203-22	Current Model		
PBP-3204-22	Current Model		
PC-1	Obsolete	Consult Factory	
PD600-230-48	Current Model		64
PF1000-360	Obsolete	PF1000A	94
PF1000A-360	Current Model		94
PF500-360	Obsolete	PF500A	94
PF500A-360	Current Model		94
RP0300-3AH-N	Obsolete	SVT300	44
RP0300-3AH-Z	Obsolete	SVT300	44
RP0300-4BH-N	Obsolete	SVQ300	44
RP0300-4BH-Z	Obsolete	SVQ300	44
RP0300-4CH-N	Obsolete	SVQ300	44
RP0300-4CH-Z	Obsolete	SVQ300	44
RP0300-4DH-N	Obsolete	SVQ300	44
RP0300-4DH-Z	Obsolete	SVQ300	44
RP0300-4EH-N	Obsolete	SVQ300	44
RP0300-4EH-Z	Obsolete	SVQ300	44
RP0300-5BJ-N	Obsolete	SVQ & ZWS	44,14
RP0300-5BJ-Z	Obsolete	SVQ & ZWS	44,14
RP0300-5BK-N	Obsolete	SVQ & ZWS	44,14
RP0300-5BK-Z	Obsolete	SVQ & ZWS	44,14
RP0300-5CJ-N	Obsolete	SVQ & ZWS	44,14
RP0300-5CJ-Z	Obsolete	SVQ & ZWS	44,14
RP0300-5CK-N	Obsolete	SVQ & ZWS	44,14
RP0300-5CK-Z	Obsolete	SVQ & ZWS	44,14
RP0300-5DJ-N	Obsolete	SVQ & ZWS	44,14
RP0300-5DJ-Z	Obsolete	SVQ & ZWS	44,14
RP0300-5DK-N	Obsolete	SVQ & ZWS	44,14
RP0300-5DK-Z	Obsolete	SVQ & ZWS	44,14
RP0300-5EJ-N	Obsolete	SVQ & ZWS	44,14
RP0300-5EJ-Z	Obsolete	SVQ & ZWS	44,14
RP0300-5EK-N	Obsolete	SVQ & ZWS	44,14
RP0300-5EK-Z	Obsolete	SVQ & ZWS	44,14
RP0500-3AH-N	BTO: 10 PC. Min.	RP0550-3AHN	54
RP0500-3AH-Z	BTO: 10 PC. Min.	RP0550-3AHZ	54
RP0500-4BH-N	BTO: 10 PC. Min.	RP0550-4BHN	54
RP0500-4BH-Z	BTO: 10 PC. Min.	RP0550-4BHZ	54
RP0500-4CH-N	BTO: 10 PC. Min.	RP0550-4CHN	54
RP0500-4CH-Z	BTO: 10 PC. Min.	RP0550-4CHZ	54
RP0500-4DH-N	BTO: 10 PC. Min.	RP0550-4DHN	54
RP0500-4DH-Z	BTO: 10 PC. Min.	RP0550-4DHZ	54
RP0500-4EH-N	BTO: 10 PC. Min.	RP0550-4EHN	54
RP0500-4EH-Z	BTO: 10 PC. Min.	RP0550-4EHZ	54
RP0500-5BJ-N	BTO: 10 PC. Min.	RP0550-5BJN	54
RP0500-5BJ-Z	BTO: 10 PC. Min.	RP0550-5BJZ	54
RP0500-5BK-N	BTO: 10 PC. Min.	RP0550-5BKN	54
RP0500-5BK-Z	BTO: 10 PC. Min.	RP0550-5BKZ	54
RP0500-5CJ-N	BTO: 10 PC. Min.	RP0550-5CJN	54
RP0500-5CJ-Z	BTO: 10 PC. Min.	RP0550-5CJZ	54
RP0500-5CK-N	BTO: 10 PC. Min.	RP0550-5CKN	54
RP0500-5CK-Z	BTO: 10 PC. Min.	RP0550-5CKZ	54
RP0500-5DJ-N	BTO: 10 PC. Min.	RP0550-5DJN	54
RP0500-5DJ-Z	BTO: 10 PC. Min.	RP0550-5DJZ	54
RP0500-5DK-N	BTO: 10 PC. Min.	RP0550-5DKN	54
RP0500-5DK-Z	BTO: 10 PC. Min.	RP0550-5DKZ	54
RP0500-5EJ-N	BTO: 10 PC. Min.	RP0550-5EJN	54
RP0500-5EJ-Z	BTO: 10 PC. Min.	RP0550-5EJZ	54
RP0500-5EK-N	BTO: 10 PC. Min.	RP0550-5EKN	54
RP0500-5EK-Z	BTO: 10 PC. Min.	RP0550-5EKZ	54
RP0750-3AH-N	BTO: 10 PC. Min.	RP0750-3AHN	54
RP0750-3AH-Z	BTO: 10 PC. Min.	RP0750-3AHZ	54
RP0750-4BH-N	BTO: 10 PC. Min.	RP0750-4BHN	54
RP0750-4BH-Z	BTO: 10 PC. Min.	RP0750-4BHZ	54
RP0750-4CH-N	BTO: 10 PC. Min.	RP0750-4CHN	54
RP0750-4CH-Z	BTO: 10 PC. Min.	RP0750-4CHZ	54
RP0750-4DH-N	BTO: 10 PC. Min.	RP0750-4DHN	54
RP0750-4DH-Z	BTO: 10 PC. Min.	RP0750-4DHZ	54
RP0750-4EH-N	BTO: 10 PC. Min.	RP0750-4EHN	54
RP0750-4EH-Z	BTO: 10 PC. Min.	RP0750-4EHZ	54
RP0750-5BJ-N	BTO: 10 PC. Min.	RP0750-5BJN	54
RP0750-5BJ-Z	BTO: 10 PC. Min.	RP0750-5BJZ	54
RP0750-5BK-N	BTO: 10 PC. Min.	RP0750-5BKN	54
RP0750-5BK-Z	BTO: 10 PC. Min.	RP0750-5BKZ	54
RP0750-5CJ-N	BTO: 10 PC. Min.	RP0750-5CJN	54
RP0750-5CJ-Z	BTO: 10 PC. Min.	RP0750-5CJZ	54
RP0750-5CK-N	BTO: 10 PC. Min.	RP0750-5CKN	54
RP0750-5CK-Z	BTO: 10 PC. Min.	RP0750-5CKZ	54
RP0750-5DJ-N	BTO: 10 PC. Min.	RP0750-5DJN	54
RP0750-5DJ-Z	BTO: 10 PC. Min.	RP0750-5DJZ	54
RP0750-5DK-N	BTO: 10 PC. Min.	RP0750-5DKN	54
RP0750-5DK-Z	BTO: 10 PC. Min.	RP0750-5DKZ	54
RP0750-5EJ-N	BTO: 10 PC. Min.	RP0750-5EJN	54
RP0750-5EJ-Z	BTO: 10 PC. Min.	RP0750-5EJZ	54
RP0750-5EK-N	BTO: 10 PC. Min.	RP0750-5EKN	54
RP0750-5EK-Z	BTO: 10 PC. Min.	RP0750-EKZ	54
RP1000-3AH-N	BTO: 10 PC. Min.	RP1000-3AHN	54
RP1000-3AH-Z	BTO: 10 PC. Min.	RP1000-3AHZ	54
RP1000-4BH-N	BTO: 10 PC. Min.	RP1000-4BHN	54
RP1000-4BH-Z	BTO: 10 PC. Min.	RP1000-4BHZ	54
RP1000-4CH-N	BTO: 10 PC. Min.	RP1000-4CHN	54
RP1000-4CH-Z	BTO: 10 PC. Min.	RP1000-4CHZ	54
RP1000-4DH-N	BTO: 10 PC. Min.	RP1000-4DHN	54
RP1000-4DH-Z	BTO: 10 PC. Min.	RP1000-4DHZ	54
RP1000-4EH-N	BTO: 10 PC. Min.	RP1000-4EHN	54
RP1000-4EH-Z	BTO: 10 PC. Min.	RP1000-4EHZ	54
RP1000-5BJ-N	BTO: 10 PC. Min.	RP1000-5BJN	54
RP1000-5BJ-Z	BTO: 10 PC. Min.	RP1000-5BJZ	54
RP1000-5BK-N	BTO: 10 PC. Min.	RP1000-5BKN	54
RP1000-5BK-Z	BTO: 10 PC. Min.	RP1000-5BKZ	54
RP1000-5CJ-N	BTO: 10 PC. Min.	RP1000-5CJN	54
RP1000-5CJ-Z	BTO: 10 PC. Min.	RP1000-5CJZ	54
RP1000-5CK-N	BTO: 10 PC. Min.	RP1000-5CKN	54
RP1000-5CK-Z	BTO: 10 PC. Min.	RP1000-5CKZ	54
RP1000-5DJ-N	BTO: 10 PC. Min.	RP1000-5DJN	54
RP1000-5DJ-Z	BTO: 10 PC. Min.	RP1000-5DJZ	54
RP1000-5DK-N	BTO: 10 PC. Min.	RP1000-5DKN	54
RP1000-5DK-Z	BTO: 10 PC. Min.	RP1000-5DKZ	54
RP1000-5EJ-N	BTO: 10 PC. Min.	RP1000-5EJN	54
RP1000-5EJ-Z	BTO: 10 PC. Min.	RP1000-5EJZ	54
RP1000-5EK-N	BTO: 10 PC. Min.	RP1000-5EKN	54
RP1000-5EK-Z	BTO: 10 PC. Min.	RP1000-5EKZ	54
PFD0503-4BH-N	Obsolete	UltraFlex 48 VDC	92
PFD0503-4BH-T	Obsolete	UltraFlex 48 VDC	92
PFD0503-4BH-Z	Obsolete	UltraFlex 48 VDC	92
PFD0503-4CH-N	Obsolete	UltraFlex 48 VDC	92
PFD0503-4CH-T	Obsolete	UltraFlex 48 VDC	92
PFD0503-4CH-Z	Obsolete	UltraFlex 48 VDC	92
PFD0503-4DH-N	Obsolete	UltraFlex 48 VDC	92
PFD0503-4DH-T	Obsolete	UltraFlex 48 VDC	92
PFD0503-4DH-Z	Obsolete	UltraFlex 48 VDC	92
PFD0503-4EH-N	Obsolete	UltraFlex 48 VDC	92
PFD0503-4EH-T	Obsolete	UltraFlex 48 VDC	92
PFD0503-4EH-Z	Obsolete	UltraFlex 48 VDC	92
PFD0505-4BH-N	Obsolete	UltraFlex 48 VDC	92
PFD0505-4BH-T	Obsolete	UltraFlex 48 VDC	92
PFD0505-4BH-Z	Obsolete	UltraFlex 48 VDC	92
PFD0505-4CH-N	Obsolete	UltraFlex 48 VDC	92
PFD0505-4CH-T	Obsolete	UltraFlex 48 VDC	92
PFD0505-4CH-Z	Obsolete	UltraFlex 48 VDC	92
PFD0505-4DH-N	Obsolete	UltraFlex 48 VDC	92
PFD0505-4DH-T	Obsolete	UltraFlex 48 VDC	92
PFD0505-4DH-Z	Obsolete	UltraFlex 48 VDC	92
PFD0505-4EH-N	Obsolete	UltraFlex 48 VDC	92
PFD0505-4EH-T	Obsolete	UltraFlex 48 VDC	92
PFD0505-4EH-Z	Obsolete	UltraFlex 48 VDC	92
PFD0753-4BH-N	Current Model		94
PFD0753-4BH-T	Current Model		94
PFD0753-4BH-Z	Current Model		94
PFD0753-4CH-N	Current Model		94
PFD0753-4CH-T	Current Model		94
PFD0753-4CH-Z	Current Model		94
PFD0753-4DH-N	Current Model		94
PFD0753-4DH-T	Current Model		94
PFD0753-4DH-Z	Current Model		94
PFD0753-4EH-N	Current Model		94
PFD0753-4EH-T	Current Model		94
PFD0753-4EH-Z	Current Model		94
PFD0755-4BH-N	Current Model		94
PFD0755-4BH-T	Current Model		94
PFD0755-4BH-Z	Current Model		94
PFD0755-4CH-N	Current Model		94

Index by model number

MODEL	STATUS	REPLACED BY	PG
PFD0755-4CH-T	Current Model		94
PFD0755-4CH-Z	Current Model		94
PFD0755-4DH-N	Current Model		94
PFD0755-4DH-T	Current Model		94
PFD0755-4DH-Z	Current Model		94
PFD0755-4EH-N	Current Model		94
PFD0755-4EH-T	Current Model		94
PFD0755-4EH-Z	Current Model		
94PFD1003-4BH-N	Current Model		94
PFD1003-4BH-T	Current Model		94
PFD1003-4BH-Z	Current Model		94
PFD1003-4CH-N	Current Model		94
PFD1003-4CH-T	Current Model		94
PFD1003-4CH-Z	Current Model		94
PFD1003-4DH-N	Current Model		94
PFD1003-4DH-T	Current Model		94
PFD1003-4DH-Z	Current Model		94
PFD1003-4EH-N	Current Model		94
PFD1003-4EH-T	Current Model		94
PFD1003-4EH-Z	Current Model		94
PFD1005-4BH-N	Current Model		94
PFD1005-4BH-T	Current Model		94
PFD1005-4BH-Z	Current Model		94
PFD1005-4CH-N	Current Model		94
PFD1005-4CH-T	Current Model		94
PFD1005-4CH-Z	Current Model		94
PFD1005-4DH-N	Current Model		94
PFD1005-4DH-T	Current Model		94
PFD1005-4DH-Z	Current Model		94
PFD1005-4EH-T	Current Model		94
PFD1005-4EH-T	Current Model		94
PFD1005-4EH-Z	Current Model		94
PFHC-2600	BTO: 25 PC. Min.		
PH100F24-12	Current Model		82
PH100F24-15	Current Model		82
PH100F24-24	Current Model		82
PH100F24-28	Current Model		82
PH100F24-5	Current Model		82
PH100S280-12	Current Model		82
PH100S280-15	Current Model		82
PH100S280-24	Current Model		82
PH100S280-28	Current Model		82
PH100S280-5	Current Model		82
PH100S48-12	Current Model		82
PH100S48-15	Current Model		82
PH100S48-24	Current Model		82
PH100S48-28	Current Model		82
PH100S48-5	Current Model		82
PH150F110-12	BTO: 10 PC. Min.		82
PH150F110-15	BTO: 10 PC. Min.		82
PH150F110-2	BTO: 10 PC. Min.		82
PH150F110-24	BTO: 10 PC. Min.		82
PH150F110-28	BTO: 10 PC. Min.		82
PH150F110-3	BTO: 10 PC. Min.		82
PH150F110-5	BTO: 10 PC. Min.		82
PH150F280-12	Current Model		82
PH150F280-15	Current Model		82
PH150F280-2	Current Model		82
PH150F280-24	Current Model		82
PH150F280-28	Current Model		82
PH150F280-3	Current Model		82
PH150F280-5	Current Model		82
PH150F48-12	Current Model		82
PH150F48-15	Current Model		82
PH150F48-2	Current Model		82
PH150F48-24	Current Model		82
PH150F48-28	Current Model		82
PH150F48-3	Current Model		82
PH150F48-5	Current Model		82
PH150S110-12	BTO: 10 PC. Min.		82
PH150S110-15	BTO: 10 PC. Min.		82
PH150S110-24	BTO: 10 PC. Min.		82
PH150S110-28	BTO: 10 PC. Min.		82
PH150S110-5	BTO: 10 PC. Min.		82
PH150S280-12	Current Model		82
PH150S280-15	Current Model		82
PH150S280-24	Current Model		82
PH150S280-28	Current Model		82
PH150S280-5	Current Model		82
PH150S48-12	Current Model		82
PH150S48-15	Current Model		82
PH150S48-24	Current Model		82
PH150S48-28	Current Model		82
PH150S48-5	Current Model		82
PH300F110-12	BTO: 10 PC. Min.		82
PH300F110-15	BTO: 10 PC. Min.		82
PH300F110-2	BTO: 10 PC. Min.		82
PH300F110-24	BTO: 10 PC. Min.		82
PH300F110-28	BTO: 10 PC. Min.		82
PH300F110-3	BTO: 10 PC. Min.		82
PH300F110-5	BTO: 10 PC. Min.		82
PH300F280-12	Current Model		82
PH300F280-15	Current Model		82
PH300F280-2	Current Model		82
PH300F280-24	Current Model		82
PH300F280-28	Current Model		82
PH300F280-3	Current Model		82
PH300F280-5	Current Model		82
PH300F48-12	Current Model		82
PH300F48-15	Current Model		82
PH300F48-2	Current Model		82
PH300F48-24	Current Model		82
PH300F48-28	Current Model		82
PH300F48-3	Current Model		82
PH300F48-5	Current Model		82
PH50S110-12	BTO: 10 PC. Min.	PH75	82
PH50S110-15	BTO: 10 PC. Min.	PH75	82
PH50S110-24	BTO: 10 PC. Min.	PH75	82
PH50S110-28	BTO: 10 PC. Min.	PH75	82
PH50S110-5	BTO: 10 PC. Min.	PH75	82
PH50S24-12	Current Model		82
PH50S24-15	Current Model		82
PH50S24-24	Current Model		82
PH50S24-28	Current Model		82
PH50S24-5	Current Model		82
PH50S280-12	BTO: 10 PC. Min.	PH75S	82
PH50S280-15	BTO: 10 PC. Min.	PH75S	82
PH50S280-24	BTO: 10 PC. Min.	PH75S	82
PH50S280-28	BTO: 10 PC. Min.	PH75S	82
PH50S280-5	BTO: 10 PC. Min.	PH75S	82
PH50S48-12	BTO: 10 PC. Min.	PH75S	82
PH50S48-15	BTO: 10 PC. Min.	PH75S	82
PH50S48-24	BTO: 10 PC. Min.	PH75S	82
PH50S48-28	BTO: 10 PC. Min.	PH75S	82
PH50S48-5	BTO: 10 PC. Min.	PH75S	82
PH75F110-12	BTO: 10 PC. Min.		82
PH75F110-15	BTO: 10 PC. Min.		82
PH75F110-2	BTO: 10 PC. Min.		82
PH75F110-24	BTO: 10 PC. Min.		82
PH75F110-28	BTO: 10 PC. Min.		82
PH75F110-3	BTO: 10 PC. Min.		82
PH75F110-5	BTO: 10 PC. Min.		82
PH75F280-12	Current Model		82
PH75F280-15	Current Model		82
PH75F280-2	Current Model		82
PH75F280-24	Current Model		82
PH75F280-28	Current Model		82
PH75F280-3	Current Model		82
PH75F280-5	Current Model		82
PH75F48-12	Current Model		82
PH75F48-15	Current Model		82
PH75F48-2	Current Model		82
PH75F48-24	Current Model		82
PH75F48-28	Current Model		82
PH75F48-3	Current Model		82
PH75F48-5	Current Model		82
PH75S110-12	BTO: 10 PC. Min.		82
PH75S110-15	BTO: 10 PC. Min.		82
PH75S110-24	BTO: 10 PC. Min.		82
PH75S110-28	BTO: 10 PC. Min.		82
PH75S110-5	BTO: 10 PC. Min.		82
PH75S280-12	Current Model		82
PH75S280-15	Current Model		82
PH75S280-24	Current Model		82
PH75S280-28	Current Model		82
PH75S280-5	Current Model		82
PH75S48-12	Current Model		82
PH75S48-15	Current Model		82
PH75S48-24	Current Model		82
PH75S48-28	Current Model		82
PH75S48-5	Current Model		82
PKT150F	Current Model		86
PKT150S	Current Model		86
PKT300F	Current Model		86
PKT50S/75S	Current Model		86
PKT75F/100S	Current Model		86
PKTPFC	Current Model		86
PKTPR500	Current Model		86
PM05-12D12	BTO: 10 PC. Min.	PM10-12D12	76
PM05-12D15	BTO: 10 PC. Min.	PM10-12D15	76
PM05-12S03	BTO: 10 PC. Min.	PM10-12S03	76
PM05-12S05	BTO: 10 PC. Min.	PM10-12S05	76
PM05-12S12	BTO: 10 PC. Min.	PM10-12S12	76
PM05-12S15	BTO: 10 PC. Min.	PM10-12S15	76
PM05-24D12	BTO: 10 PC. Min.	PM10-24D12	76
PM05-24D15	BTO: 10 PC. Min.	PM10-24D15	76
PM05-24S03	BTO: 10 PC. Min.	PM10-24S03	76
PM05-24S05	BTO: 10 PC. Min.	PM10-24S05	76
PM05-24S12	BTO: 10 PC. Min.	PM10-24S12	76
PM05-24S15	BTO: 10 PC. Min.	PM10-24S15	76
PM05-48D12	BTO: 10 PC. Min.	PM10-48D12	76
PM05-48D15	BTO: 10 PC. Min.	PM10-48D15	76
PM05-48S03	BTO: 10 PC. Min.	PM10-48S03	76
PM05-48S05	BTO: 10 PC. Min.	PM10-48S05	76
PM05-48S12	BTO: 10 PC. Min.	PM10-48S12	76
PM05-48S15	BTO: 10 PC. Min.	PM10-48S15	76
PM10-12D12	Current Model		76
PM10-12D15	Current Model		76
PM10-12S03	Current Model		76
PM10-12S05	Current Model		76
PM10-12S12	Current Model		76
PM10-12S15	Current Model		76
PM10-24D12	Current Model		76
PM10-24D15	Current Model		76
PM10-24S03	Current Model		76
PM10-24S05	Current Model		76
PM10-24S12	Current Model		76
PM10-24S15	Current Model		76
PM10-48D12	Current Model		76
PM10-48D15	Current Model		76
PM10-48S03	Current Model		76

MODEL	STATUS	REPLACED BY	PG
PM10-48S05	Current Model		76
PM10-48S12	Current Model		76
PM10-48S15	Current Model		76
PM15-12D12	BTO: 10 PC. Min.	PM20-12D12	76
PM15-12D15	BTO: 10 PC. Min.	PM20-12D15	76
PM15-12S03	BTO: 10 PC. Min.	PM20-12S03	76
PM15-12S05	BTO: 10 PC. Min.	PM20-12S05	76
PM15-12S12	BTO: 10 PC. Min.	PM20-12S12	76
PM15-12S15	BTO: 10 PC. Min.	PM20-12S15	76
PM15-24D12	BTO: 10 PC. Min.	PM20-24D12	76
PM15-24D15	BTO: 10 PC. Min.	PM20-24D15	76
PM15-24S03	BTO: 10 PC. Min.	PM20-24S03	76
PM15-24S05	BTO: 10 PC. Min.	PM20-24S05	76
PM15-24S12	BTO: 10 PC. Min.	PM20-24S12	76
PM15-24S15	BTO: 10 PC. Min.	PM20-24S15	76
PM15-48D12	BTO: 10 PC. Min.	PM20-48D12	76
PM15-48D15	BTO: 10 PC. Min.	PM20-48D15	76
PM15-48S03	BTO: 10 PC. Min.	PM20-48S03	76
PM15-48S05	BTO: 10 PC. Min.	PM20-48S05	76
PM15-48S12	BTO: 10 PC. Min.	PM20-48S12	76
PM15-48S15	BTO: 10 PC. Min.	PM20-48S15	76
PM20-12D12	Current Model		76
PM20-12D15	Current Model		76
PM20-12S03	Current Model		76
PM20-12S05	Current Model		76
PM20-12S12	Current Model		76
PM20-12S15	Current Model		76
PM20-24D12	Current Model		76
PM20-24D15	Current Model		94
PM20-24S03	Current Model		76
PM20-24S05	Current Model		76
PM20-24S12	Current Model		76
PM20-24S15	Current Model		76
PM20-48D12	Current Model		76
PM20-48D15	Current Model		76
PM20-48S03	Current Model		76
PM20-48S05	Current Model		76
PM20-48S12	Current Model		76
PM20-48S15	Current Model		76
PM30-12D12	Current Model		76
PM30-12D15	Current Model		76
PM30-12S03	Current Model		76
PM30-12S05	Current Model		76
PM30-12S12	Current Model		76
PM30-12S15	Current Model		76
PM30-12T0312	Current Model		76
PM30-12T0315	Current Model		76
PM30-12T0512	Current Model		76
PM30-12T0515	Current Model		76
PM30-24D12	Current Model		76
PM30-24D15	Current Model		76
PM30-24S03	Current Model		76
PM30-24S05	Current Model		76
PM30-24S12	Current Model		76
PM30-24S15	Current Model		76
PM30-24T0312	Current Model		76
PM30-24T0315	Current Model		76
PM30-24T0512	Current Model		76
PM30-24T0515	Current Model		76
PM30-48D12	Current Model		76
PM30-48D15	Current Model		76
PM30-48S03	Current Model		76
PM30-48S05	Current Model		76
PM30-48S12	Current Model		76
PM30-48S15	Current Model		76
PM30-48T0312	Current Model		76
PM30-48T0315	Current Model		76
PM30-48T0512	Current Model		76
PM30-48T0515	Current Model		94
PN1207F	BTO: 10 PC. Min.		88
PN1210F	BTO: 10 PC. Min.		88
PN1215F	BTO: 10 PC. Min.		88
PN3207	Current Model		88
PN3215	Current Model		88
PP1R5-12-12	Current Model		74
PP1R5-12-15	Current Model		74
PP1R5-12-5	Current Model		74
PP1R5-24-12	Current Model		74
PP1R5-24-15	Current Model		74
PP1R5-24-5	Current Model		74
PP1R5-48-12	Current Model		74
PP1R5-48-15	Current Model		74
PP1R5-48-5	Current Model		74
PP1R5-5-12	Current Model		74
PP1R5-5-15	Current Model		74
PP1R5-5-5	Current Model		74
PP3-12-12	Current Model		74
PP3-12-15	Current Model		74
PP3-12-5	Current Model		74
PP3-24-12	Current Model		74
PP3-24-15	Current Model		74
PP3-24-5	Current Model		74
PP3-48-12	Current Model		74
PP3-48-15	Current Model		74
PP3-48-5	Current Model		74
PP3-5-12	Current Model		74
PP3-5-15	Current Model		74
PP3-5-5	Current Model		74
PP6-12-12	Current Model		74
PP6-12-15	Current Model		74
PP6-12-5	Current Model		74
PP6-24-12	Current Model		74
PP6-24-15	Current Model		74
PP6-24-5	Current Model		74
PP6-48-12	Current Model		74
PP6-48-15	Current Model		74
PP6-48-5	Current Model		74
PP6-5-12	Current Model		74
PP6-5-15	Current Model		74
PP6-5-5	Current Model		74
PPD1R5-12-1212	Current Model		74
PPD1R5-12-1515	Current Model		74
PPD1R5-24-1212	Current Model		74
PPD1R5-24-1515	Current Model		74
PPD1R5-48-1212	Current Model		74
PPD1R5-48-1515	Current Model		74
PPD1R5-5-1212	Current Model		74
PPD1R5-5-1515	Current Model		74
PPD3-12-1212	Current Model		74
PPD3-12-1515	Current Model		74
PPD3-24-1212	Current Model		74
PPD3-24-1515	Current Model		74
PPD3-48-1212	Current Model		74
PPD3-48-1515	Current Model		74
PPD3-5-1212	Current Model		74
PPD3-5-1515	Current Model		74
PPD6-12-1212	Current Model		74
PPD6-12-1515	Current Model		74
PPD6-24-1212	Current Model		74
PPD6-24-1515	Current Model		74
PPD6-48-1212	Current Model		74
PPD6-48-1515	Current Model		74
PPD6-5-1212	Current Model		74
PPD6-5-1515	Current Model		74
PR500-280	Current Model		88
PT500-48	Current Model		88
PT500-66	Current Model		88
R160-27-00-01	BTO: 5 PC. Min.		
R160-55-00-01	BTO: 5 PC. Min.		
R80-55-00-01	BTO: 5 PC. Min.		
RM100-48-2	Current Model		80
RM100-48-3.3	Current Model		80
RM100-48-5	Current Model		80
RM30-48-2	Current Model		80
RM30-48-3.3	Current Model		80
RM30-48-5	Current Model		80
RM50-48-2	Current Model		80
RM50-48-3.3	Current Model		80
RM50-48-5	Current Model		80
RP0530-3AH-Z	Current Model		54
RP0530-4AH-Z	Current Model		54
RP0530-4BH-Z	Current Model		54
RP0530-4CH-Z	Current Model		54
RP0530-4DH-Z	Current Model		54
RP0530-4EH-Z	Current Model		54
RP0530-5AJ-Z	Current Model		54
RP0530-5AK-Z	Current Model		54
RP0530-5BJ-Z	Current Model		54
RP0530-5BK-Z	Current Model		54
RP0530-5CJ-Z	Current Model		54
RP0530-5CK-Z	Current Model		54
RP0530-5DJ-Z	Current Model		54
RP0530-5DK-Z	Current Model		54
RP0530-5EJ-Z	Current Model		54
RP0530-5EK-Z	Current Model		54
RP0550-3AH-Z	Current Model		54
RP0550-4AH-Z	Current Model		54
RP0550-4BH-Z	Current Model		54
RP0550-4CH-Z	Current Model		54
RP0550-4DH-Z	Current Model		54
RP0550-4EH-Z	Current Model		54
RP0550-5AJ-Z	Current Model		54
RP0550-5AK-Z	Current Model		54
RP0550-5BJ-Z	Current Model		54
RP0550-5BK-Z	Current Model		54
RP0550-5CJ-Z	Current Model		54
RP0550-5CK-Z	Current Model		54
RP0550-5DJ-Z	Current Model		54
RP0550-5DK-Z	Current Model		54
RP0550-5EJ-Z	Current Model		54
RP0550-5EK-Z	Current Model		54
RP0750-3AH-Z	Current Model		54
RP0750-4AH-Z	Current Model		54
RP0750-4BH-Z	Current Model		54
RP0750-4CH-Z	Current Model		54
RP0750-4DH-Z	Current Model		54
RP0750-4EH-Z	Current Model		54
RP0750-5AJ-Z	Current Model		54
RP0750-5AK-Z	Current Model		54
RP0750-5BJ-Z	Current Model		54
RP0750-5BK-Z	Current Model		54
RP0750-5CJ-Z	Current Model		54
RP0750-5CK-Z	Current Model		54
RP0750-5DJ-Z	Current Model		54
RP0750-5DK-Z	Current Model		54
RP0750-5EJ-Z	Current Model		54
RP0750-5EK-Z	Current Model		54
RP1000-3AH-Z	Current Model		54
RP1000-4AH-Z	Current Model		54
RP1000-4BH-Z	Current Model		54
RP1000-4CH-Z	Current Model		54

Index by model number

MODEL	STATUS	REPLACED BY	PG
RP1000-4DH-Z	Current Model		54
RP1000-4EH-Z	Current Model		54
RP1000-5AJ-Z	Current Model		54
RP1000-5AK-Z	Current Model		54
RP1000-5BJ-Z	Current Model		54
RP1000-5BK-Z	Current Model		54
RP1000-5CJ-Z	Current Model		54
RP1000-5CK-Z	Current Model		
54RP1000-5DJ-Z	Current Model		54
RP1000-5DK-Z	Current Model		54
RP1000-5EJ-Z	Current Model		54
RP1000-5EK-Z	Current Model		54
RS-10 Series	Obsolete	ZWS50	14
RS-7 Series	Obsolete	ZWS10	14
RS-8 Series	Obsolete	ZWS15	14
RS-9 Series	Obsolete	ZWS30	14
RWS-1000A-12	BTO: 10 PC. Min.	LZS1000-2	58
RWS-1000A-15	BTO: 10 PC. Min.	LZS1000-2	58
RWS-1000A-2	BTO: 10 PC. Min.		22
RWS-1000A-20	BTO: 10 PC. Min.	LZS1000-3	58
RWS-1000A-24	BTO: 10 PC. Min.	LZS1000-3	58
RWS-1000A-28	BTO: 10 PC. Min.	LZS1000-3	58
RWS-1000A-48	BTO: 10 PC. Min.	JFS1000-48	28
RWS-1000A-5	BTO: 10 PC. Min.	LZS1000-1	58
RWS-1000A-6	BTO: 10 PC. Min.	LZS1000-1	58
RWS-200A-12	BTO: 5 PC. Min.	SVPS25	44
RWS-200A-15	BTO: 5 PC. Min.	SVPS25	44
RWS-200A-24	BTO: 5 PC. Min.	SVPS25	44
RWS-200A-5	BTO: 5 PC. Min.	SVPS25	44
RWS-300A-12	BTO: 5 PC. Min.	SVPS25/JWS300	44,24
RWS-300A-15	BTO: 5 PC. Min.	SVPS25/JWS300	44,24
RWS-300A-24	BTO: 5 PC. Min.	SVPS25/JWS300	44,24
RWS-300A-5	BTO: 5 PC. Min.	SVPS25/JWS300	44,24
RWS-450A-12	BTO: 5 PC. Min.	JFS500/JWS600	28,24
RWS-450A-15	BTO: 5 PC. Min.	JFS500/JWS600	28,24
RWS-450A-24	BTO: 5 PC. Min.	JFS500/JWS600	28,24
RWS-450A-5	BTO: 5 PC. Min.	JFS500/JWS600	28,24
RWS-600A-12	BTO:10 PC. Min.	JWS600	24
RWS-600A-15	BTO:10 PC. Min.	JWS600	24
RWS-600A-2	BTO:10 PC. Min.	JWS600	24
RWS-600A-20	BTO:10 PC. Min.	JWS600	24
RWS-600A-24	BTO:10 PC. Min.	JWS600	24
RWS-600A-28	BTO:10 PC. Min.	JWS600	24
RWS-600A-48	BTO:10 PC. Min.	JWS600	24
RWS-600A-5	BTO:10 PC. Min.	JWS600	24
RWS-600A-6	BTO:10 PC. Min.	JWS600	24
RWS15A-12A	Current Model		22
RWS15A-15A	Current Model		22
RWS15A-24A	Current Model		22
RWS15A-5A	Current Model		22
RWS30A-12A	Current Model		22
RWS30A-15A	Current Model		22
RWS30A-24A	Current Model		22
RWS30A-5A	Current Model		22
RWS50A-12A	Current Model		22
RWS50A-15A	Current Model		22
RWS50A-24A	Current Model		22
RWS50A-5A	Current Model		22
SB-22	Current Model		
SB-30	Current Model		103
SB-40	Current Model		
SB-41	Current Model		
SB-50	Current Model		103
SE-1000-1	BTO:10 PC. Min.	LZS1000-1	58
SE-1000-2	BTO:10 PC. Min.	LZS1000-2	58
SE-1000-3	Current Model		58
SE-150-1	BTO:10 PC. Min.	JWS150	24

MODEL	STATUS	REPLACED BY	PG
SE-150-2	BTO:10 PC. Min.	JWS150	24
SE-150-3	Current Model		58
SE-1500-1	BTO:10 PC. Min.	LZS1500-1	58
SE-1500-2	BTO:10 PC. Min.	LZS1500-2	58
SE-1500-3	Current Model		58
SE-250-1	BTO:10 PC. Min.	LZS250-1	58
SE-250-2	BTO:10 PC. Min.	LZS250-2	58
SE-250-3	Current Model		58
SE-50-1	BTO: 50 PC. Min.	JWS50	24
SE-50-2	BTO: 50 PC. Min.	JWS50	24
SE-50-3	BTO: 50 PC. Min.	JWS50	24
SE-50-4	BTO: 50 PC. Min.	JWS50	24
SE-500-1	BTO:10 PC. Min.	LZS500-1	58
SE-500-2	BTO:10 PC. Min.	LZS500-2	58
SE-500-3	Current Model		58
SE-750-1	BTO:10 PC. Min.	LZS750-1	58
SE-750-2	BTO:10 PC. Min.	LZS750-2	58
SE-750-3	LZS750		58
SM10D	Current Model		78
SM10S	Current Model		78
SM20D	Current Model		78
SM20S	Current Model		78
SM30D	Current Model		78
SM30S	Current Model		78
SM30T	Current Model		78
SMLC 50R 00	Obsolete	LWT50H-522	20
SMLC 50R 01	Obsolete	SVQ130-2	44
SMLC 50R 02	Obsolete	Consult Factory	
SMLC 50R 03	Obsolete	Consult Factory	
SMLC 50R 04	Obsolete	SVQ130-2	44
SMLC 50R 08	Obsolete	SVT115-2	44
SMLC 75R 00	Obsolete	SVT115-1	44
SMLC 75R 02	Obsolete	Consult Factory	
SMLC 75R 03	Obsolete	SVQ130-1	44
SMM 1500	Obsolete	Consult Factory	
SMM 300	Obsolete	Consult Factory	
SMM 500	Obsolete	Consult Factory	
SMS 1500	Obsolete	Consult Factory	
SVKT100-25	Current Model		44
SVKT150-15	Current Model		44
SVKT200-30	Current Model		44
SVKT25-10	Current Model		44
SVKT300-11	Current Model		44
SVPQ130-1	Current Model		44
SVPQ130-1Z	Current Model		44
SVPQ130-2	Current Model		44
SVPQ130-2Z	Current Model		44
SVPQ130-3	Current Model		44
SVPQ130-3Z	Current Model		44
SVPQ130-4	Current Model		44
SVPQ130-4Z	Current Model		44
SVPQ200-1	Current Model		44
SVPQ200-1Z	Current Model		44
SVPQ200-2	Current Model		44
SVPQ200-2Z	Current Model		44
SVPQ200-3	Current Model		44
SVPQ200-3Z	Current Model		44
SVPQ300-1	Current Model		44
SVPQ300-1Z	Current Model		44
SVPQ300-2	Current Model		44
SVPQ300-2Z	Current Model		44
SVPQ300-5	Current Model		44
SVPQ300-5Z	Current Model		44
SVPS10-12	Current Model		44
SVPS10-12Z	Current Model		44
SVPS10-24	Current Model		44
SVPS10-24Z	Current Model		44

MODEL	STATUS	REPLACED BY	PG
SVPS10-5	Current Model		44
SVPS10-5Z	Current Model		44
SVPS15-12	Current Model		44
SVPS15-12Z	Current Model		44
SVPS15-24	Current Model		44
SVPS15-24Z	Current Model		44
SVPS15-5	Current Model		44
SVPS15-5Z	Current Model		44
SVPS25-12	Current Model		44
SVPS25-12Z	Current Model		44
SVPS25-15	Current Model		44
SVPS25-15Z	Current Model		44
SVPS25-24	Current Model		44
SVPS25-24Z	Current Model		44
SVPS25-28	Current Model		44
SVPS25-28Z	Current Model		44
SVPS25-48	Current Model		44
SVPS25-48Z	Current Model		44
SVPS25-5	Current Model		44
SVPS25-5Z	Current Model		44
SVPT115-1	Current Model		44
SVPT115-1Z	Current Model		44
SVPT115-2	Current Model		44
SVPT115-2Z	Current Model		44
SVPT170-1	Current Model		44
SVPT170-1Z	Current Model		44
SVPT170-2	Current Model		44
SVPT170-2Z	Current Model		44
SVPT300-1	Current Model		44
SVPT300-1Z	Current Model		44
SVQ130-1	Current Model		44
SVQ130-1Z	Current Model		44
SVQ130-2	Current Model		44
SVQ130-2Z	Current Model		44
SVQ130-3	Current Model		44
SVQ130-3Z	Current Model		44
SVQ130-4	Current Model		44
SVQ130-4Z	Current Model		44
SVQ200-1	Current Model		44
SVQ200-1Z	Current Model		44
SVQ200-2	Current Model		44
SVQ200-2Z	Current Model		44
SVQ200-3	Current Model		44
SVQ200-3Z	Current Model		44
SVQ300-1	Current Model		44
SVQ300-1Z	Current Model		44
SVQ300-2	Current Model		44
SVQ300-2Z	Current Model		44
SVQ300-5	Current Model		44
SVQ300-5Z	Current Model		44
SVS100-12	Current Model		44
SVS100-12Z	Current Model		44
SVS100-24	Current Model		44
SVS100-24Z	Current Model		44
SVS100-5	Current Model		44
SVS100-5Z	Current Model		44
SVS150-12	Current Model		44
SVS150-12Z	Current Model		44
SVS150-24	Current Model		44
SVS150-24Z	Current Model		44
SVS150-5	Current Model		44
SVS150-5Z	Current Model		44
SVT115-1	Current Model		44
SVT115-1Z	Current Model		44
SVT115-2	Current Model		44
SVT115-2Z	Current Model		44
SVT170-1	Current Model		44

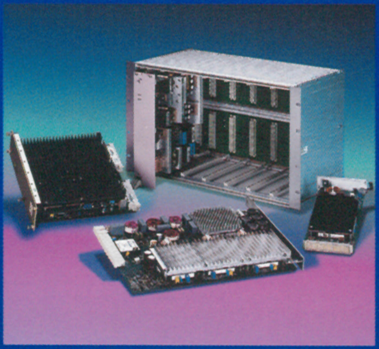
MODEL	STATUS	REPLACED BY	PG
SVT170-1Z	Current Model		44
SVT300-1	Current Model		44
SVT300-1Z	Current Model		
44SWT100-522	Current Model		18
SWT100-525	Current Model		18
SWT100-5FF	Current Model		18
SWT30-522	Current Model		18
SWT30-525	Current Model		18
SWT30-5FF	Current Model		18
SWT40-522	Current Model		18
SWT40-525	Current Model		18
SWT40-5FF	Current Model		18
SWT65-522	Current Model		18
SWT65-525	Current Model		18
SWT65-5FF	Current Model		18
UHD-150-12-300	Obsolete	PH150F280-12	82
UHD-150-12-48	Obsolete	PH150F48-12	82
UHD-150-15-300	Obsolete	PH150F280-15	82
UHD-150-15-48	Obsolete	PH150F48-15	82
UHD-150-24-300	Obsolete	PH150F280-24	82
UHD-150-24-48	Obsolete	PH150F48-24	82
UHD-150-28-300	Obsolete	PH150F280-28	82
UHD-150-28-48	Obsolete	PH150F48-28	82
UHD-150-5-300	Obsolete	PH150F280-5	82
UHD-150-5-48	Obsolete	PH150F48-5	82
VD20-0512	BTO: 25 PC. Min.		
VD75-0824	BTO: 25 PC. Min.		
VS10 Series	Obsolete	VS10B	12
VS100 Series	Obsolete	VS100B	12
VS100B-12/TRM	Obsolete	VS100B-12	12
VS100B-12	Current Model		12
VS100B-15	Current Model		12
VS100B-24	Current Model		12
VS100B-48	Current Model		12
VS100B-5	Current Model		12
VS10B-12	Current Model		12
VS10B-15	Current Model		12
VS10B-24	Current Model		12
VS10B-5	Current Model		12
VS10B-5/TRM	Obsolete	VS10B-5	12
VS15 Series	Obsolete	VS15B	12
VS150 Series	Obsolete	VS150B	12
VS150B/TRM Series	Obsolete	VS150B-12	12
VS150B-15	Current Model		12
VS150B-24	Current Model		12
VS150B-48	Current Model		12
VS150B-5	Current Model		12
VS15B TRM Series	Obsolete	VS15B	12
VS15B-12	Current Model		12
VS15B-15	Current Model		12
VS15B-24	Current Model		12
VS15B-5	Current Model		12
VS30 Series	Obsolete	VS30B	12
VS30-48	Current Model		12
VS30B-12	Current Model		12
VS30B/TRM Series	Obsolete	VS30B	12
VS30B-15	Current Model		12
VS30B-24	Current Model		12
VS30B-5	Current Model		12
VS50 Series	Obsolete	VS50B	12
VS50B/TRM Series	Obsolete	VS50B	12
VS50B-12	Current Model		12
VS50B-15	Current Model		12
VS50B-24	Current Model		12
VS50B-5	Current Model		12
VS75 Series	Obsolete	VS75B	12
VS75B/TRM Series	Obsolete	VS75B-5	12
VS75B-12	Current Model		12
VS75B-15	Current Model		12
VS75B-24	Current Model		12
VS75B-48	Current Model		12
VS75B-5	Current Model		12
VT15-522	BTO: 100 PC. Min.		
VT15-525	BTO: 100 PC. Min.		
VT15-5FF	BTO: 100 PC. Min.		
VT30-522	BTO: 100 PC. Min.		
VT30-525	BTO: 100 PC. Min.		
VT30-5FF	BTO: 100 PC. Min.		
VT60-522	BTO: 100 PC. Min.		
VT60-525	BTO: 100 PC. Min.		
VT60-5FF	BTO: 100 PC. Min.		
WA303	BTO: 25 PC. Min.	UltraFlex	50
WA305	BTO: 25 PC. Min.	UltraFlex	50
WA403	BTO: 25 PC. Min.	UltraFlex	50
WA405	BTO: 25 PC. Min.	UltraFlex	50
WA505	BTO: 25 PC. Min.	RP0550	54
WD305 00 00 02	Current Model		90
ZD120-1205	BTO: 100 PC. Min.		
ZD120-2405	BTO: 100 PC. Min.		
ZD120-2408	BTO: 100 PC. Min.		
ZD30-1205	BTO: 100 PC. Min.		
ZD30-2405	BTO: 100 PC. Min.		
ZD30-2408	BTO: 100 PC. Min.		
ZD50-1205	BTO: 100 PC. Min.		
ZD50-2405	BTO: 100 PC. Min.		
ZD50-2408	BTO: 100 PC. Min.		
ZD75-0512	BTO: 100 PC. Min.		
ZD75-0524	BTO: 100 PC. Min.		
ZD75-0824	BTO: 100 PC. Min.		
ZS10-12	BTO: 100 PC. Min.	ZWS10	14
ZS10-15	BTO: 100 PC. Min.	ZWS10	14
ZS10-24	BTO: 100 PC. Min.	ZWS10	14
ZS10-5	BTO: 100 PC. Min.	ZWS10	14
ZS100-12	BTO: 100 PC. Min.	ZWS100	14
ZS100-15	BTO: 100 PC. Min.	ZWS100	14
ZS100-24	BTO: 100 PC. Min.	ZWS100	14
ZS100-48	BTO: 100 PC. Min.	ZWS100	14
ZS100-5	BTO: 100 PC. Min.	ZWS100	14
ZS120P-24	BTO: 100 PC. Min.	ZWS120PPF	14
ZS15-12	BTO: 100 PC. Min.	ZWS15	14
ZS15-15	BTO: 100 PC. Min.	ZWS15	14
ZS15-24	BTO: 100 PC. Min.	ZWS15	14
ZS15-5	BTO: 100 PC. Min.	ZWS15	14
ZS150-12	BTO: 100 PC. Min.	ZWS150	14
ZS150-15	BTO: 100 PC. Min.	ZWS150	14
ZS150-24	BTO: 100 PC. Min.	ZWS150	14
ZS150-48	BTO: 100 PC. Min.	ZWS150	14
ZS150-5	BTO: 100 PC. Min.	ZWS150	14
ZS30-12	BTO: 100 PC. Min.	ZWS30	14
ZS30-15	BTO: 100 PC. Min.	ZWS30	14
ZS30-24	BTO: 100 PC. Min.	ZWS30	14
ZS30-48	BTO: 100 PC. Min.	ZWS30	14
ZS30-5	BTO: 100 PC. Min.	ZWS30	14
ZS50-12	BTO: 100 PC. Min.	ZWS50	14
ZS50-15	BTO: 100 PC. Min.	ZWS50	14
ZS50-24	BTO: 100 PC. Min.	ZWS50	14
ZS50-48	BTO: 100 PC. Min.	ZWS50	14
ZS50-5	BTO: 100 PC. Min.	ZWS50	14
ZS75-12	BTO: 100 PC. Min.	ZWS75	14
ZS75-15	BTO: 100 PC. Min.	ZWS75	14
ZS75-24	BTO: 100 PC. Min.	ZWS75	14
ZS75-48	BTO: 100 PC. Min.	ZWS75	14
ZS75-5	BTO: 100 PC. Min.	ZWS75	94
ZT170-522	BTO: 100 PC. Min.		
ZT170-525	BTO: 100 PC. Min.		
ZT170-5FF	BTO: 100 PC. Min.		
ZT30-522	BTO: 100 PC. Min.	SWT30	18
ZT30-525	BTO: 100 PC. Min.	SWT30	18
ZT30-5FF	BTO: 100 PC. Min.	SWT30	18
ZT60-522	BTO: 100 PC. Min.	SWT65	18
ZT60-525	BTO: 100 PC. Min.	SWT65	18
ZT60-5FF	BTO: 100 PC. Min.	SWT65	18
ZT90-522	BTO: 100 PC. Min.	SWT100	18
ZT90-525	BTO: 100 PC. Min.	SWT100	18
ZT90-5FF	BTO: 100 PC. Min.	SWT100	18
ZWS10-12	Current Model		14
ZWS10-15	Current Model		14
ZWS10-24	Current Model		14
ZWS10-3	Current Model		14
ZWS10-5	Current Model		14
ZWS100PF-12	Current Model		14
ZWS100PF-15	Current Model		14
ZWS100PF-24	Current Model		14
ZWS100PF-3	Current Model		14
ZWS100PF-36	Current Model		14
ZWS100PF-48	Current Model		14
ZWS100PF-5	Current Model		14
ZWS120PPF-24	Current Model		14
ZWS120PPF-36	Current Model		14
ZWS15-12	Current Model		14
ZWS15-15	Current Model		14
ZWS15-24	Current Model		14
ZWS15-3	Current Model		14
ZWS15-5	Current Model		14
ZWS150PF-12	Current Model		14
ZWS150PF-15	Current Model		14
ZWS150PF-24	Current Model		14
ZWS150PF-3	Current Model		14
ZWS150PF-36	Current Model		14
ZWS150PF-48	Current Model		14
ZWS150PF-5	Current Model		14
ZWS30-12	Current Model		14
ZWS30-15	Current Model		14
ZWS30-24	Current Model		14
ZWS30-3	Current Model		14
ZWS30-36	Current Model		14
ZWS30-48	Current Model		14
ZWS30-5	Current Model		14
ZWS5-12	Current Model		14
ZWS5-15	Current Model		14
ZWS5-24	Current Model		14
ZWS5-3	Current Model		14
ZWS5-5	Current Model		14
ZWS50-12	Current Model		14
ZWS50-15	Current Model		14
ZWS50-24	Current Model		14
ZWS50-3	Current Model		14
ZWS50-36	Current Model		14
ZWS50-48	Current Model		14
ZWS50-5	Current Model		14
ZWS75PF-12	Current Model		14
ZWS75PF-15	Current Model		14
ZWS75PF-24	Current Model		14
ZWS75PF-3	Current Model		14
ZWS75PF-36	Current Model		14
ZWS75PF-48	Current Model		14
ZWS75PF-5	Current Model		14

Value Added solutions

No one can create customer-specific solutions as quickly as Lambda.

Modified Standard Power Supplies. In every application, time to market as well as development budget have the greatest visibility with program management. With over 1,000 standard AC-DC and DC-DC, off the shelf power supplies to choose from, why pay NRE money up-front for a custom solution and pray for it to happen months later, when Lambda can deliver to you a modified standard power supply, the way you want it, in less than two weeks?

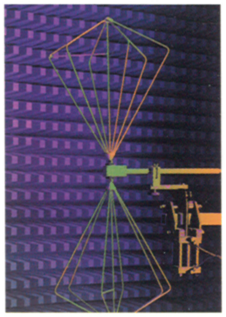
Custom Power Supplies. For requirements that cannot be met by standard or modified standard product, Lambda, the power supply technology leader for over 50 years, will design your custom power supply for you. Whether it's AC-DC, DC-DC, 1 watt or 5000 watts, Lambda's design and support team has the experience and the resources to get the job done, on time.



Hot Plug Power Cards. With our broad line of low profile DC-DC converters, Lambda can quickly create a power card to your exact specification. Lambda's plug and play cards are designed with AC and/or DC input and are available with the industry's lowest pitch, which allows you to expand system performance without increasing size.

If your needs aren't met by one of our standard products, Lambda's Value Added & Custom Products Group can design your solution. Because we start with the industry's broadest line of off-the-shelf building blocks, Lambda can typically deliver modified standard prototypes in less than two weeks, and complete custom designs in 12 weeks or less.

Lambda has 25 dedicated Design and Application Engineers to support you with fast answers to technical or business issues.

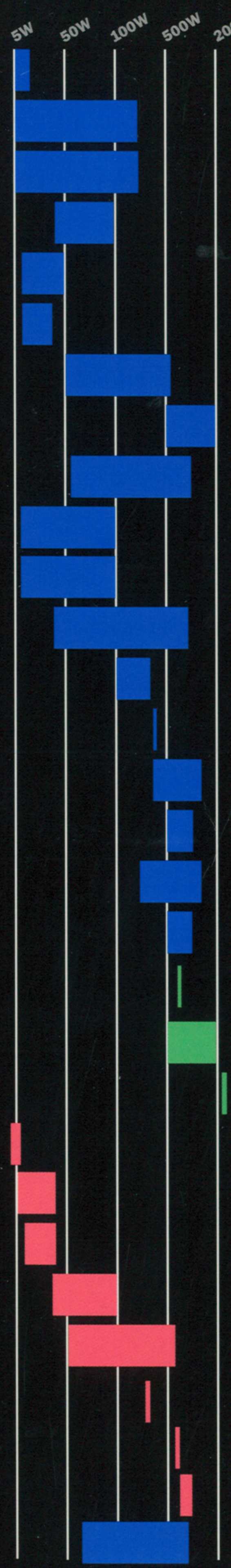


We now have in-house safety agency certification, as well as a fully operational anechoic chamber to assist customers in system testing for the Low Voltage and EMC directives – both mandatory for CE marking.

Lambda's stability and experience makes partnering with the Value Added & Custom Products Group a low risk proposition. You'll be dealing with an established company that will be responsive to your needs, now and in the future.

To speak with an Engineer about your application, call us at 1-800-851-5121.

Power Supply Rack Assemblies. Lambda can design a rack system for almost any need. In most Industrial Test applications, our LMPS system provides cost-effective single or multiple output solutions, in less than two weeks. For high power density, hot plug and redundancy, there's Lambda's FE Rack System. If a unique footprint, input/output or specific metering are required, we can quickly create a modified rack assembly to meet your exact requirement.



KW Series Compact AC-DC PCB-mount power supplies **Page 10**

VSB Series 100/115VAC low cost power supplies **Page 12**

ZW Series Worldwide, low cost power supplies **Page 14**

SWT Series Low cost triple output power supplies **Page 18**

LW Series Compact dual & triple output power supplies **Page 20**

RWS-A 15-30W industrial power supplies **Page 22**

JWS Series High quality industrial power supplies **Page 24**

JFS Series High power bulk AC-DC power **Page 28**

NES /DRPSeries Industrial DIN Rail power supplies **Page 32**

H Series Low cost linear power supplies **Page 34**

LN/LD Series Low noise linear power supplies **Page 36**

LMS Series Zero-up power supplies **Page 40**

SV/SVP Series 100W-300W power supplies **Page 44**

ALPHA Series Low cost modular power solution **Page 48**

UltraFlex Series Modular power supplies **Page 50**

RP Series CE/EMC-compliant power supplies **Page 54**

LZS/SE Series Power supplies for rugged environments **Page 58**

LRS Series Rugged convection cooled power supplies **Page 62**

PD600 Series High density rectifier module **Page 64**

FE Series Compact, rack-mountable rectifiers **Page 66**

WLR2800 Series High power rectifier **Page 70**

PP Series Low power isolated DC-DC converters **Page 74**

PM Series 5-30W low profile DC-DC converters **Page 76**

SM Series Surface mountable DC-DC converters **Page 78**

RM Series 90% efficient, low profile DC-DC converters **Page 80**

PH Series High power DC-DC converters **Page 82**

WD305 DC-DC power supply **Page 90**

UltraFlex Series Modular 48 VDC input power supplies **Page 92**

PFD Series 48VDC-input power supplies **Page 94**

LLS Series Laboratory power supplies **Page 98**

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